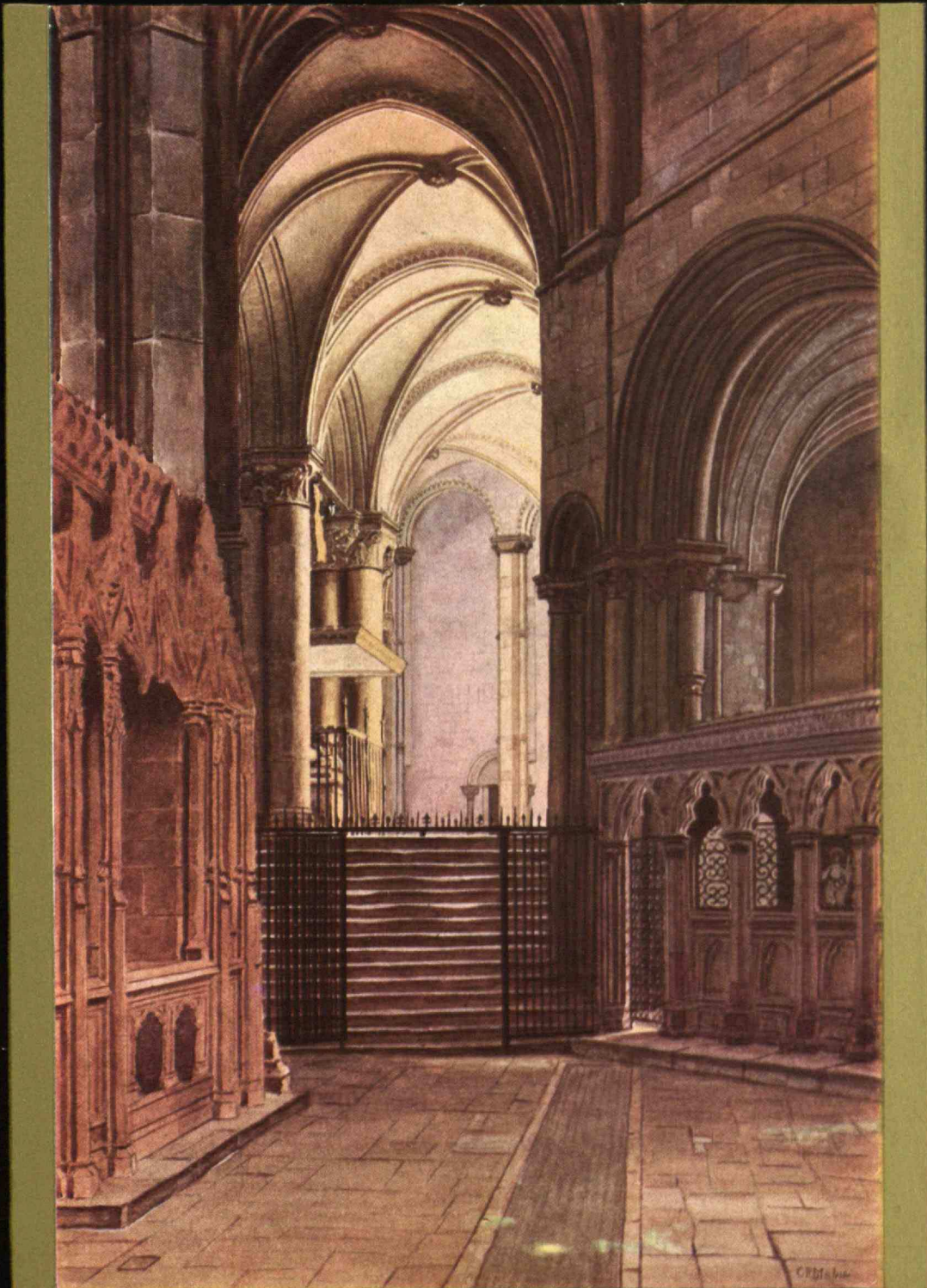


THE TECHNOLOGY REVIEW

APRIL 1931



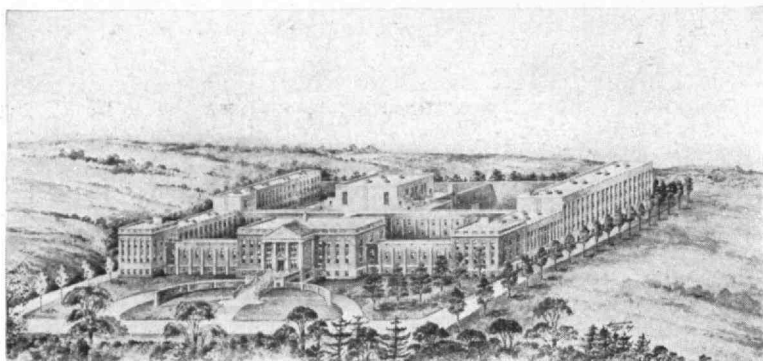
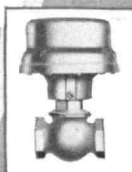
technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.

SERVICE

Thirty Johnson Branches;
Emergency Attention With-
in 24 Hours Anywhere.
Each Johnson Installa-
tion Inspected Annu-
ally Without Charge.
Every Johnson In-
stallation made
by the John-
son Mechan-
ics Only.



Albany County Jail Shaker Farm Colonie, N. Y.
Howard Rogers, Albany, N. Y., *Architect* Elmer E. Palmer, Syracuse, N. Y., *Engineer*

The Six Buildings of Albany County Jail Under Johnson Control

All of the heating sources in this group of buildings is under Johnson Heat & Humidity Control. The Dual Thermostat (Night and Day or Two Temperature) System is installed: automatically maintaining even normal temperature in each department during hours of their occupancy, automatically reducing the heat when departments are vacated, automatically returning the heat to normal at the hours departments become occupied again. This provides a valuable service convenience, and also produces a large saving in fuel consumption per year. There are six department buildings, divided into separate control sections or circuits . . . with six control boards in the engineers office from where the heat in each department building can be turned on or off separately and independently of the remainder of the institution. The department buildings so divided are: Administration Building, 4 control circuits; Guards' Building, 3 control circuits; Women's Department, 3 control circuits; East Cell Block, 4 control circuits; West Cell Block, 4 control circuits; Chapel Building, 3 control circuits. There are a total of 230 Johnson Dual Thermostats, controlling 461 Syphon Radiator Valves. The ventilation is also Johnson Controlled, the equipment including a 2-point duct Thermostat, 23 dampers with Syphon attachments, 2 Syphon coil valves, 2 Syphon Mixing Damper Motors, 2 electric air compressors and 13 air storage tanks — high pressure air being piped to each building, where it is reduced at the air storage tanks and controlled for circulation by the switch boards already referred to.

The All Metal System. The All-Perfect Graduated Control of Valves and Dampers. The Dual Thermostat (Night & Day or Two Temperature) Control: Fuel Saving 25 to 40 Per Cent.

JOHNSON SERVICE COMPANY . . 149 E. Michigan . . MILWAUKEE, WIS.

Albany	Cincinnati	Greensboro, N.C.	Philadelphia	Seattle
Atlanta	Cleveland	Indianapolis	Pittsburgh	Calgary, Alta.
Baltimore	Dallas	Kansas City	Portland	Montreal, Que.
Boston	Denver	Los Angeles	St. Louis	Winnipeg, Man.
Buffalo	Des Moines	Minneapolis	Salt Lake City	Toronto, Ont.
Chicago	Detroit	New York	San Francisco	Vancouver, B.C.

JOHNSON HEAT AND HUMIDITY CONTROL



COOPER RIVER BRIDGE

Charleston, S. C.

Total length over two miles

11,500 TONS OF STEEL

Built by

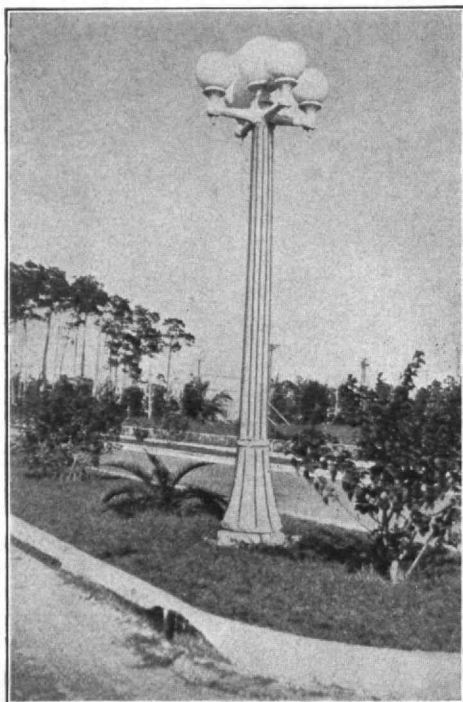
McClintic-Marshall

Subsidiary of Bethlehem Steel Corporation

DESIGN BY WADDELL AND HARDESTY, CONSULTING ENGINEERS

SIMPLEX

Non-Metallic Underground Cables



These cables are made in two types, type W P protected by a series of weatherproofed tapes, and Type R J protected by a rubber jacket and weatherproofed tapes.

They are recommended for municipal street lighting "white way," traffic signal installations, park, playground, or airport lighting and low voltage power distribution.

Simplex Non-Metallic Underground Cables are acid, alkali and waterproof. They are light in weight, more flexible than cables protected by metallic sheaths and can be easily and quickly installed.

If you require underground cable that will assure dependable performance combined with the endurance that means true cable economy—specify Simplex Non-Metallic Underground Cable. Write for more complete information.

SIMPLEX WIRE & CABLE CO

MANUFACTURERS

201 DEVONSHIRE ST., BOSTON

BRANCH SALES OFFICES

CHICAGO, 564 W. Monroe St. SAN FRANCISCO, 390 Fourth St.
NEW YORK, 1328 B'way CLEVELAND, 2019 Union Trust Bldg.
PHILADELPHIA, 1227 Fidelity-Philadelphia Trust Building
JACKSONVILLE, 417 Barnett National Bank Building

THE TABULAR VIEW

SOMETIMES the layman is not as gullible as many pseudo-scientists think he is. The following bit of light verse from the Manchester *Guardian*, laughing gently but effectively over an absurd statement, is a point in evidence:

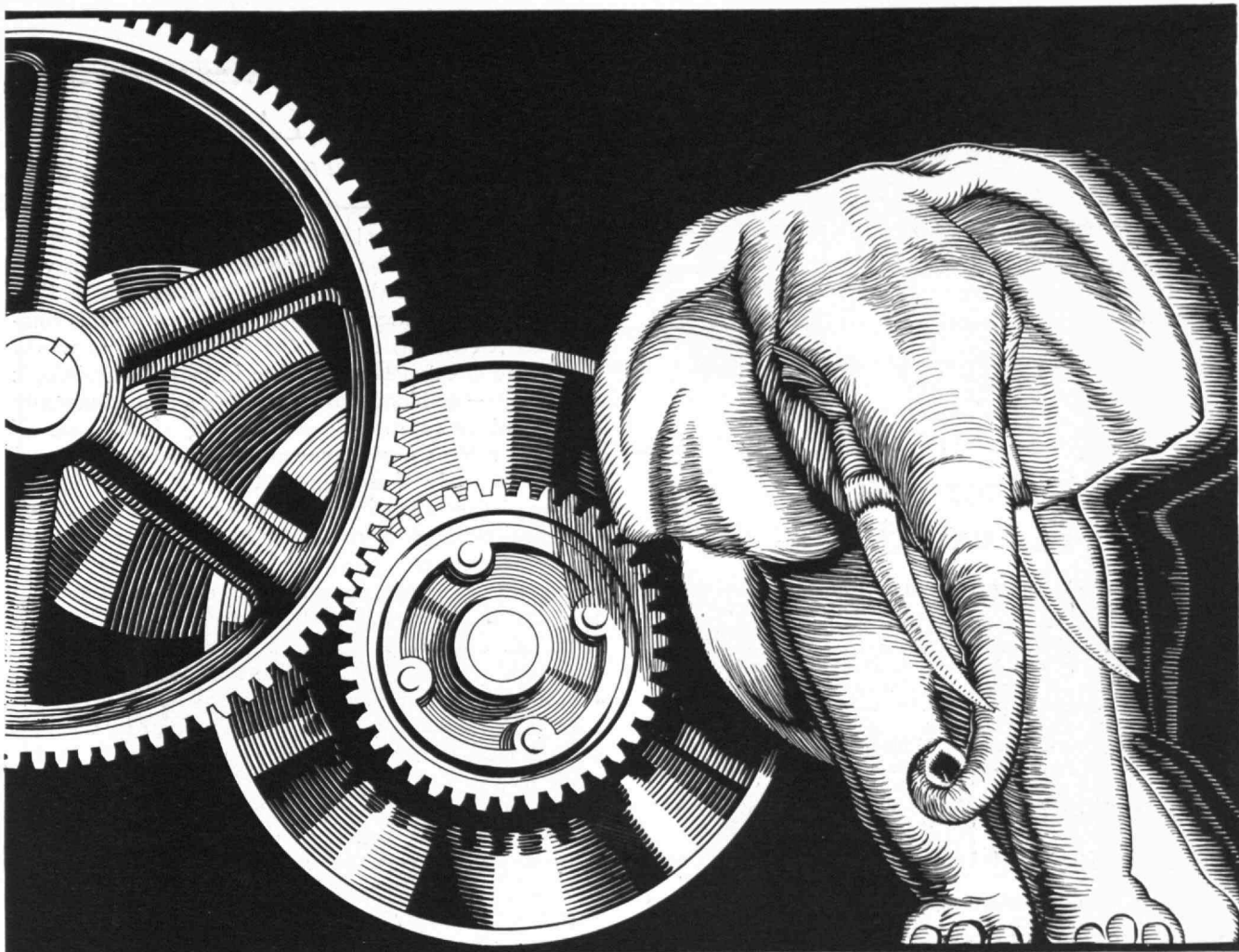
HOW TO BE A HERO

"When a man distinguishes himself in face of great danger or in a sudden crisis he is under the influence of a substance called adrenalin, which flows from the adrenal gland into the blood. Heroes are simply people with enlarged adrenal glands. This adrenalin can be made in the laboratory by the distillation of coal tar." — From a class room lecture.

O, let me like a soldier fall
In some tremendous fight;
I fear no foe or cannon ball —
(Hi! are my glands all right?)
In slothful ease let cowards loll
While I on carnage sup.
(But kindly pass the adrenal
To get my dander up.)
My country, 'tis of thee I think,
My soul with ardour fills.
(One moment, Doctor, while I sink
Your latest dose of pills.)
Be mine the patriotic line,
The true heroic stuff!
(But, gosh! I hope that gland of mine
Is duly up to snuff.)
I do not care how fierce the threat,
Nor how forlorn the hope.
(That is, provided I can get
The right degree of dope.)
Now let the butchery begin,
I shall not flinch or fly —
Ho! drench me with adrenalin
That I may do or die!

But the public has not uniformly acted with such sanity on the great body of distorted information that has been thrown at them about science, particularly endocrinology — the science of the ductless glands. From time to time, The Review has had the privilege of presenting carefully prepared papers on this subject, free from sensationalism and distortion, yet interesting and readable to the layman. "Causes of Misbehavior," presented on page 327, is another article in this series treating of the possible endocrine factors in the behavior problems of childhood. Its author, ALLAN W. ROWE, '01, is Chief of Research at the Robert Dawson Evans Memorial for Clinical Research and Preventive Medicine, an organization formed for systematic study in many branches of medicine. It maintains departments in clinical research, biochemistry, immunology, bacteriology, pathology, physiology, pharmacology, and several of the specialized branches. Under Dr. Rowe's direction research has been conducted along definite scientific lines and the successful results have been applied directly to the study and care of the sick. ¶ Twice before Dr. Rowe has written of different phases of his work at the Evans Memorial Hospital. In July, 1928, he wrote on the functions of the endocrine glands, and in February, 1929, he went on to reveal some of the methods of the endocrinologists. In this issue, he goes yet a step further into the relation of

(Continued on page 316)



Brakes on Efficiency?

**NORTON COMPANY
WORCESTER, MASS.**

"A white elephant with the king's compliments"—and the king's grudge was paid off. Every owner of a sacred elephant travels the short road to poverty.

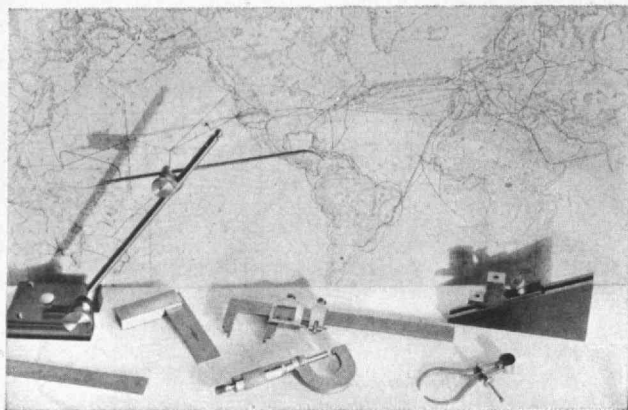
The sacred elephant he dare not sell, nor kill—and its appetite never fails.

Factory "white elephants" are not sacred elephants, although there are more of them. There is hardly a machine shop in the country without one or more—lathe, planer, boring mill, miller or a grinding machine. A machine that doesn't produce work of a quality and at the rate of the more modern types is a liability—a white elephant.

Let's go elephant hunting among the Grinding Machines.

NORTON

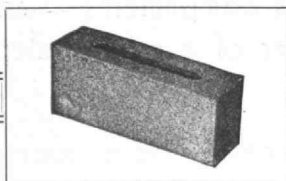




To the far corners of the world

Brown & Sharpe Tools go to the far corners of the world to help in maintaining accuracy in mechanical work. For longer than old mechanics can remember, Brown & Sharpe has provided reliable tools for taking measurements accurately. And men who know tools, the world over, still look to Brown & Sharpe when they want fine tools, as did their fathers and grandfathers before them. Small Tool Catalog No. 31 on request. Brown & Sharpe Mfg. Co., Providence, R. I.

BROWN & SHARPE
"World's Standard  of Accuracy"



CINUCOR MASONRY UNITS

They are light, tough and strong.
Used where fire safety, sound proof-
ness and insulation are desired.

CINUCOR units are used for all types
of construction and are made in
various sizes.

Write for "CINUCOR MANUAL"

CINDER CONCRETE UNITS CORPORATION
BOSTON, MASSACHUSETTS

PLANT
East Somerville
Phone SOMerset
2754



OFFICE
201 Devonshire St.
Phone HUBbard
1733-1734

THE TABULAR VIEW

(Continued from page 314)

glandular activity and human activity and behavior. ¶ An editorial on the development of biochemistry in the United States in the *Journal* of the American Medical Association (February 21, 1931) is pertinent to this comment as it concerns exactly the sort of work in which Dr. Rowe is engaged. We quote in part: "Physiologic chemistry — or biochemistry, as it has been commonly designated more recently — has long since come of age. The subject has become an important and integral part of the study of medicine and the practice of the art. The special technic of biochemistry has been introduced into clinical diagnosis to such an extent that it competes in prominence with physical procedures and with bacteriologic and immunologic methods of examination and research. A recent writer has remarked that today it is quite safe to state that in the United States there is hardly a university worthy of the name that does not have on its staff one or more competent investigators in physiologic chemistry and a well-equipped laboratory with resources adequate for at least some lines of research in this field. Added to these centers of research are the many special laboratories connected with the larger hospitals of the country where investigations of a chemico-physiologic character are conducted; the many research institutions and foundations with their large endowments, where many biochemists of national reputation are to be found; and lastly, the various government bureaus at Washington with their well-equipped laboratories and trained workers who have contributed largely to the development of knowledge of a chemico-physiologic nature in many directions." At one time, it goes on to say, Americans desirous of gaining knowledge and experience in this work were obliged to go to Germany to study methods. Dr. Rowe himself holds a degree from a German university.

AS AN engineer, GEORGE A. RICKER has encountered many interesting experiences. Perhaps the most dramatic of these was in connection with his work in building the Niagara Gorge Railroad, an account of which is given in his article "Niagara's Wayward Youth." Few people can boast of as intimate acquaintance with this most powerful of waterfalls. Such an enterprise required imagination and daring as well as engineering ability. ¶ Mr. Ricker became connected with this work through two of his clients, Captain John M. Brinker and Hon. Herbert P. Bissell, the promoters of the railroad and afterwards President and Secretary-Counsel, respectively. These men had confidence in his ability to be successful in an undertaking that even conservatives termed rash, and others, more freely spoken, considered a crazy scheme. The money to build with was furnished by a small group of enthusiasts as no orderly financing was possible because almost everyone consulted, including engineers, branded the project as impracticable. In 1901 the roadbed, track and

(Concluded on page 318)

WJTV 8A 108

The Brasscrafters TRADE MARK

SCIENCE IN MIRROR MAKING

Mirrors scientifically silvered by the *"EVALAST" process are protected from deterioration by a metal film united with the silvered surface by electrolysis. This definite protection determines the life of a mirror and justifies our guarantee.

PLATE I
SILVERED BY THE USUAL PROCESS

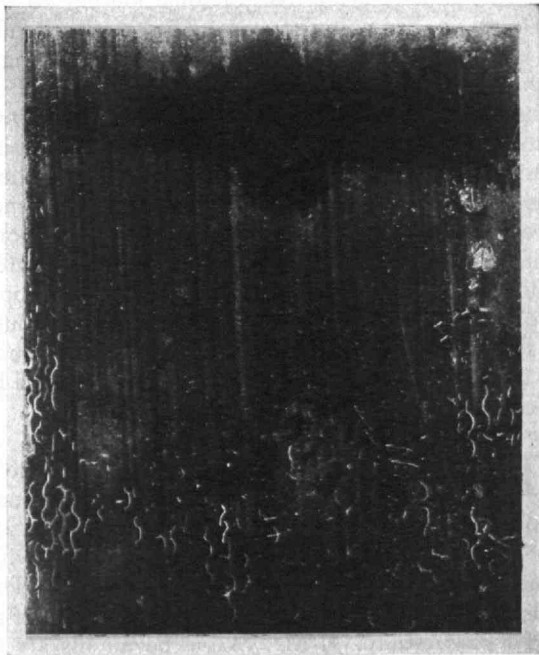
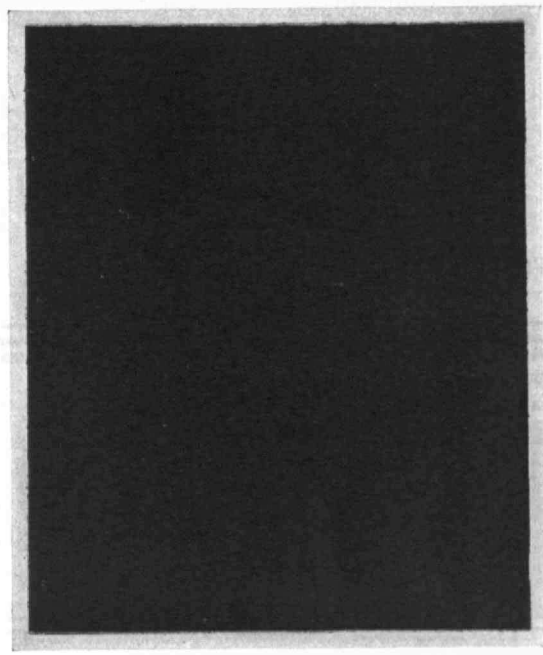


PLATE II
SILVERED BY THE "EVALAST" PROCESS



These illustrations were made from actual photographs (without retouching) of specimens of mirror plates which were submerged constantly in water for over eight months, except for occasional inspection, and demonstrate graphically the action of silver under atmospheric moisture when applied by the usual process and by the "EVALAST" Process.

PLATE I — The deterioration, so apparent in the streaks, crazes, and dullness, is common in mirrors silvered by the usual process. Mirrors so affected may be found everywhere — in homes, on ships, institutions, and public building installations.

PLATE II — Shows, in comparison with Plate I, much better than word description can, the perfection and freedom from the usual deterioration which are guaranteed to you when you buy and install the BRASSCRAFTERS' "EVALAST" Mirrors and Medicine Cabinets.

Science Specifies Brasscrafters' "Evalast"

Architects, contractors, builders and home owners will find our Handbook "O" on Mirrors and Medicine Cabinets of value when considering building projects or renovations.

J. P. EUSTIS MANUFACTURING CO.

The Brasscrafters TRADE MARK

Originators and Manufacturers of Metal Frame French Plate Mirrors, Metal Medicine Cabinets, Staple Bathroom Accessories

12-14-16 AMES STREET

CAMBRIDGE, "A" BOSTON, MASSACHUSETTS

*Trade Mark Registered.

EXPERIENCE COUNTS

IN

TOOL, GAGE, AND SPECIAL MACHINERY MANUFACTURE

Each member of our firm has had extensive experience in designing and building special equipment for all types of industry. Among our satisfied clients are included the Gillette Safety Razor Company, and the Edison Electric Illuminating Company.

Consult us on your next problem

J. G. RUSSELL COMPANY
INCORPORATED

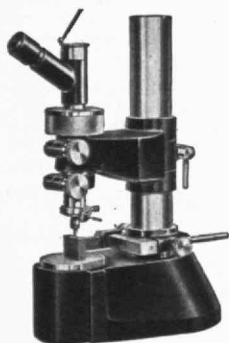
103 Boston Street

SOUTH BOSTON

MASSACHUSETTS

**BAUSCH
& LOMB**
for
PRECISION

Optical Compar-
ator, precise to .00005
of an inch. One of
the Bausch & Lomb
family of precision
instruments for
solving the prob-
lems of industry.



FOR BETTER VISION ••
ORTHOGON LENSES

**BAUSCH & LOMB
OPTICAL COMPANY**

635 ST. PAUL STREET
ROCHESTER, NEW YORK

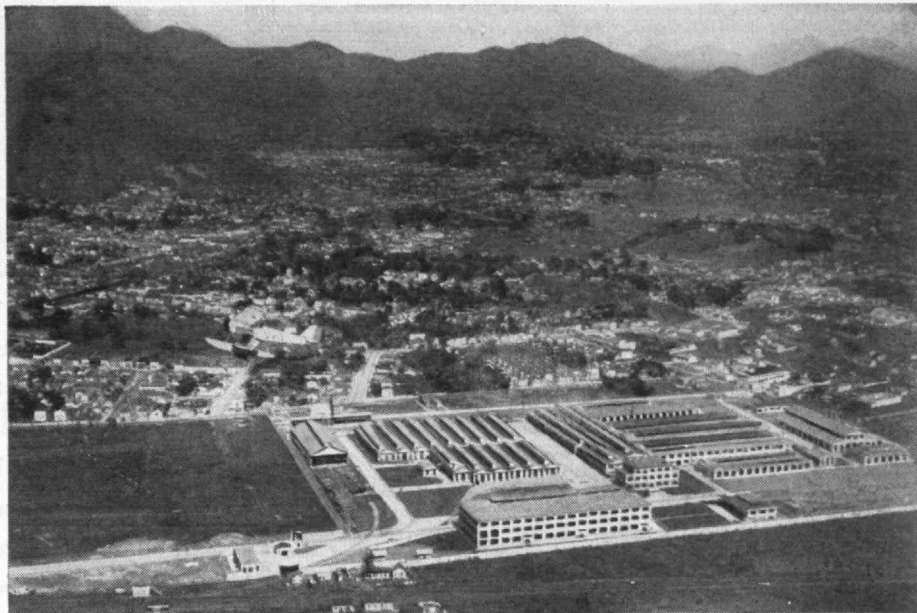
THE TABULAR VIEW

(Concluded from page 316)

equipment were in good shape and over a million and a half tourists saw the wonderful gorge from end to end without a care for the cost or the troubles that had been undergone in making the ride possible. The chief point which Mr. Ricker particularly emphasizes is the possibility of nailing down the Falls where they are.

WILLIAM P. CUTTER is a Contributing Editor to The Review. This month he writes of the proposed development of the Hackensack Meadow Region in his article entitled "The City of Tomorrow." The region in itself is about as unpromising as that through which Childe Roland made his gruesome journey to the Dark Tower in Browning's poem. This territory offers the same challenge to the vigorously persistent engineer of today as did that barren plain to the knight of old. The modern engineer, however, does more than blow a defiant trumpet in the face of opposition as there is in his makeup the unquenchable urge to build. ¶ The city of tomorrow is all planned and ready to build, and it has been made public in printed form in "The Regional Plan of New York and Its Environs." Unfortunately, the Board can do no more than plan for this development as it has no authority to execute such an enormous undertaking — another example of Prometheus Enchained. Mr. Cutter is engaged in research at the Harvard Business School.

THE picture on the cover of this issue of The Review is reproduced from a water color by CHARLES H. R. MABIE of the Institute's Drawing Department. It shows the stairway in Canterbury Cathedral, up which the medieval pilgrims toiled to the shrine of St. Thomas à Becket. The original was painted at the close of a period of foreign study. ¶ Mr. Mabie began his art training as a boy under the tutelage of an older brother, an alumnus of the Institute and a practicing architect in Boston. This was a happy introduction to four years of serious study in the Massachusetts Normal Art School some years later. Following graduation, he spent four years as supervisor of Drawing and Manual Training in the town of Framingham, Mass. Then came the opportunity for study abroad, in either an English or German school. Since his home life had largely been influenced by English traditions, he quite naturally chose a London school; and since his leaning was toward creative and applied design, he chose the Royal College of Art, rather than the Academy. Here, under the guidance of Professor Lethaby and other able men, he was led into the intricacies of artistic design in its application to the industries and architecture. ¶ When the War came, Mr. Mabie returned to America with as much of South Kensington Museum and other parts of Europe, as he had been able to copy and a knowledge which Europe alone could give him. He also returned with a large part of the spirit of the Old World, something which can be felt and lived but cannot be described.



Largest Tramway Car Shops in South America

...recently completed at Rio de Janeiro

THESE great shops for the Rio de Janeiro Tramway, Light & Power Company, Limited, with their 24 buildings and 430,000 square feet of space are unique in their completeness.

Because they are equipped to handle so many manufacturing and repair operations, they place this large utility system in an unusually independent position.

The shops are designed for the following work:

- Maintenance of 1000 tramway cars and buses;
- Construction of new steel cars and buses;
- Repair of heavy machinery, motors and generating equipment;
- Manufacture of power line equipment, many car and bus parts, castings, brake shoes, etc.;
- Manufacture of all bare and weatherproof copper wire required for the system, 850 tons annually;
- Fabrication of substation structures;
- Construction of metal and wood furniture for cars, buses and offices;
- General stores for shops and entire system.

We designed and built the shops in cooperation with our client's organization.

We are prepared to handle construction undertakings anywhere in the world.

UNITED ENGINEERS & CONSTRUCTORS INC.

combining

Day & Zimmermann
Engineering & Construction Co.
Dwight P. Robinson & Co., Inc.
The U. G. I. Contracting Co.
Public Service Production Co.
United Engineers & Constructors
(Canada) Ltd.
Dwight P. Robinson & Company
of Brazil, Inc.
Dwight P. Robinson & Company
of Argentina, Inc.



Design and Construct

INDUSTRIAL PLANTS
STEAM POWER STATIONS
HYDRO-ELECTRIC
DEVELOPMENTS
RAILROAD WORK
GAS PLANTS
PIPE LINES

Build

APARTMENTS
HOTELS
OFFICE & MONUMENTAL
BUILDINGS

UNITED ENGINEERS & CONSTRUCTORS INCORPORATED

DWIGHT P. ROBINSON, PRESIDENT

PHILADELPHIA
LOS ANGELES

NEW YORK
MONTREAL

NEWARK
TORONTO

BOSTON
BUENOS AIRES

CHICAGO
RIO DE JANEIRO

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

AFTER THE
G·T·M·
THE TOUGH
JOB GOES
SMOOTHLY



THE G·T·M·

Goodyear Technical Man—is bad news for the tough job. His engineering attack is varied. Now it is movement of goods, now of power, now the disposal of waste. Everywhere he bears down on costs and builds up efficiency. He has a hawk's eye for waste, a faculty for improvement. Whether it is movement of materials, air, liquids, or engine-power, by the careful application of Goodyear Mechanical Rubber Goods in Hose, Belting, Molded Rubber Goods, and Packing, he has unkinked many a hard knot. He gets the work out.

Just as the G.T.M. works in the field for the benefit of countless operations, so the Goodyear engineering staff works in Goodyear's vast laboratories at Akron. Scientists as they are, they are also practical men, who keep constantly in touch with the latest manufacturing methods. Often they anticipate needs. In rapid succession, they recently produced Goodyear Emerald Cord Multiple "V" Belting, Goodyear Compass Cord Endless Belting, Goodyear Thor Belting, seamless, and several new types of industrial hose far in advance of ordinary practice.

For interesting data on Goodyear Mechanical Rubber Goods in industry, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME

IN RUBBER

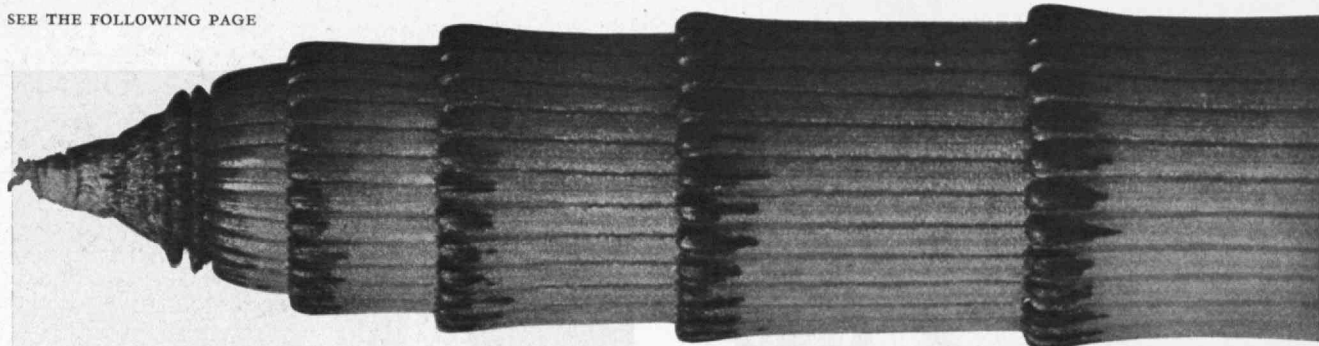
GOOD YEAR

BELTS

MOLDED GOODS

HOSE

PACKING



THE TECHNOLOGY REVIEW

Edited at the Massachusetts Institute of Technology

VOLUME XXXIII

NUMBER 7

Contents for April, 1931

URFORMEN DER KUNST — PROTOTYPES OF ART	FRONTISPIECE	322
<i>Photographic Studies of Magnified Plants</i>		
NIAGARA'S WAYWARD YOUTH	BY GEORGE A. RICKER	323
<i>A Sheaf of Notes on Niagara Falls</i>		
CAUSES OF MISBEHAVIOR	BY ALLAN W. ROWE	327
<i>The Possible Part Played by Disorders of the Ductless Glands in the Behavior Problems of Childhood</i>		
A CITY OF TOMORROW	BY WILLIAM P. CUTTER	329
<i>The Gigantic Project to Reclaim the Hackensack Meadows (N. J.) and Build a Great City There</i>		
<hr/>		
THE TABULAR VIEW		314
<i>Notes on Contributors and Contributions</i>		
THE TREND OF AFFAIRS		332
<i>The Past Month in Science and Engineering</i>		
THE INSTITUTE GAZETTE		340
<i>Relating to the Massachusetts Institute of Technology</i>		
THE COVER	From a Water Color BY CHARLES H. R. MABIE	
<i>The Stairway in Canterbury Cathedral</i>		

EDITOR
J. RHYNE KILLIAN, JR.

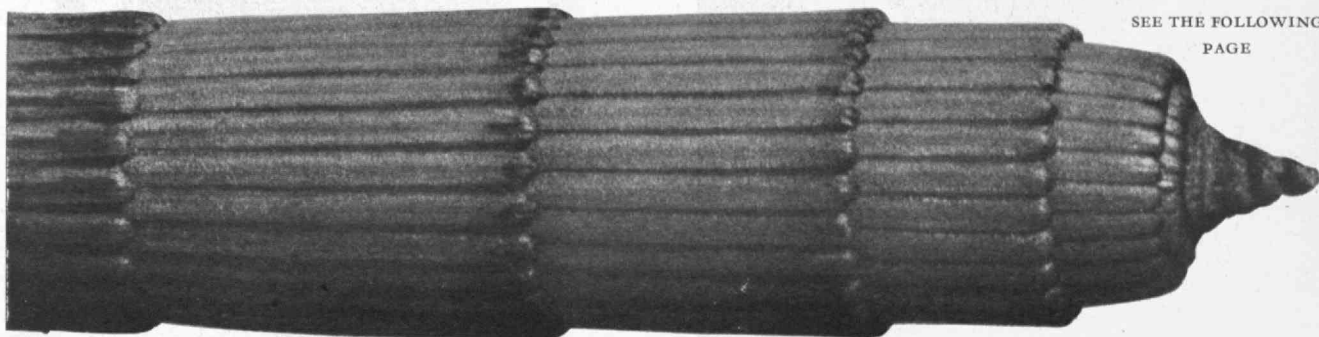
PUBLISHER
HAROLD E. LOBDELL
CONTRIBUTING EDITOR
JOHN J. ROWLANDS

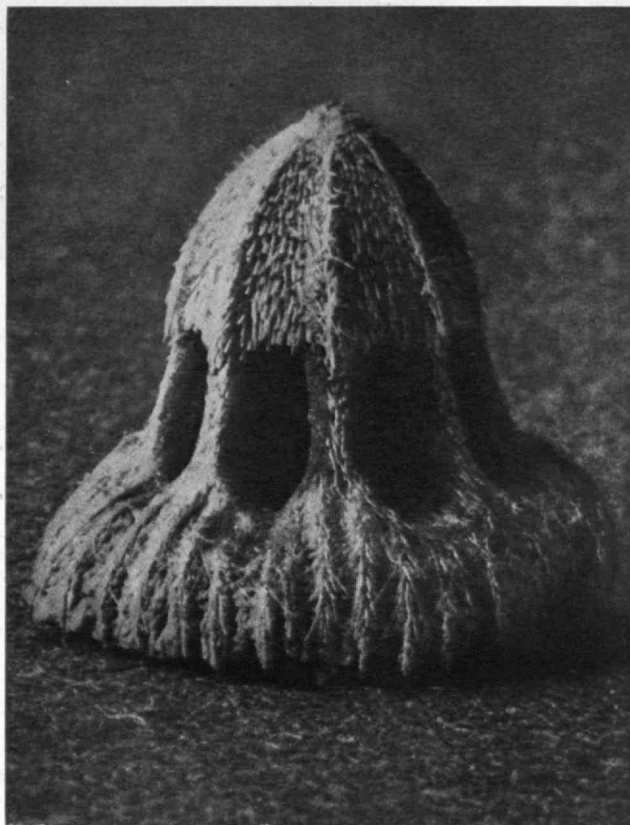
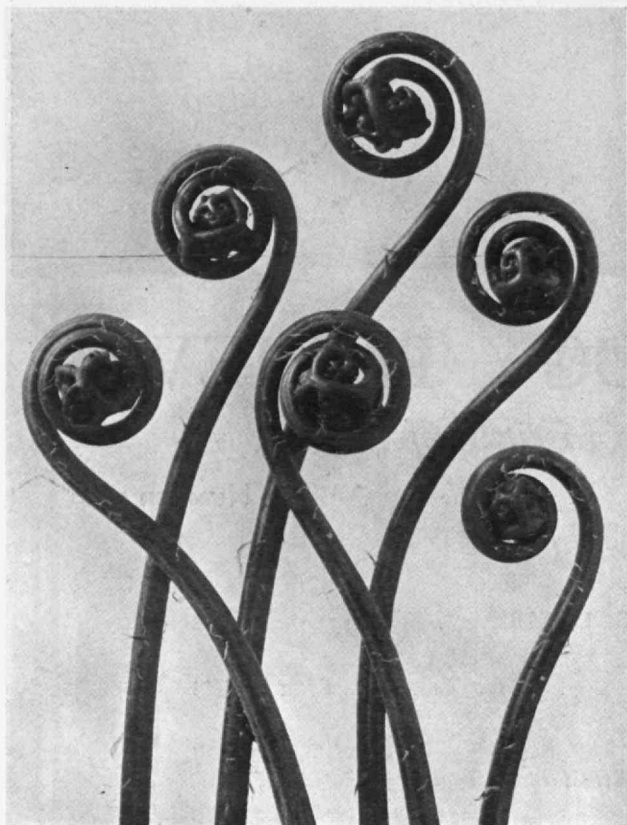
BUSINESS MANAGER
RALPH T. JOPE

PUBLISHED monthly on the twenty-seventh of the month preceding the date of issue at 50 cents a copy. Annual subscription \$3.50; Canadian and foreign subscription \$4.00. . . . Published for the Alumni Association of the Massachusetts Institute of Technology. Thomas C. Desmond, President; Francis J. Chesterman, George K. Burgess, Donald G. Robbins, Vice-Presidents.

Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 11-203, Massachusetts Institute of Technology, Cambridge A, Mass. Entered as Second-Class Mail Matter at the Post Office at Concord, N. H. . . . Copyright, 1931, by The Technology Review. . . . Three weeks must be allowed to effect changes of address. Both old and new addresses should be given.

SEE THE FOLLOWING
PAGE

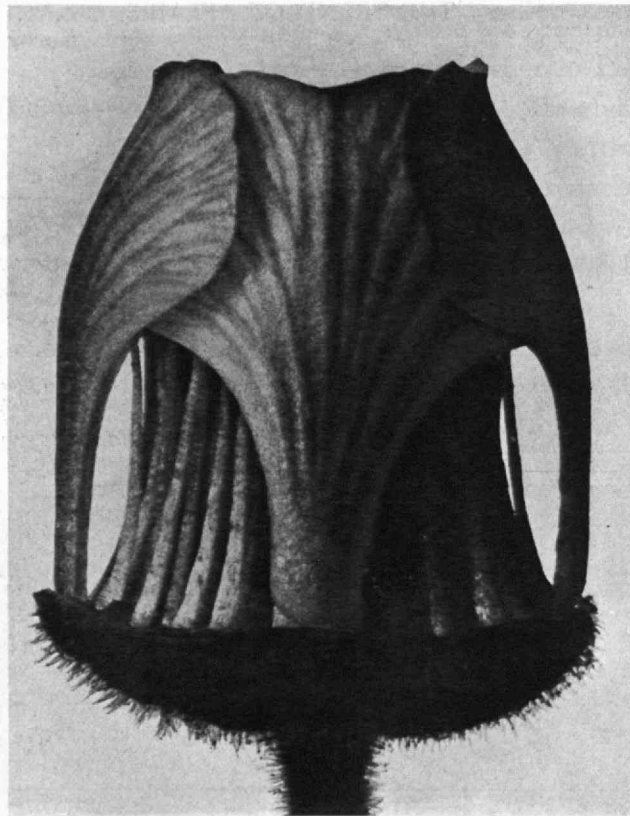
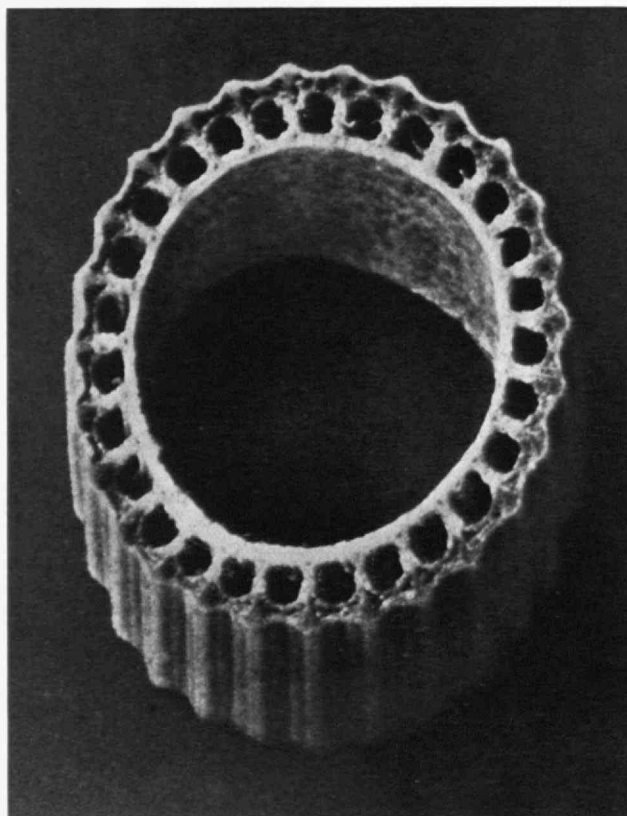




URFORMEN DER KUNST—PROTOTYPES OF ART

PHOTOGRAPHIC STUDIES OF MAGNIFIED PLANTS — PROOFS, PERHAPS, OF OSCAR WILDE'S DICTUM THAT NATURE IMITATES ART
See Preceding Page also

From "Urformen der Kunst" by Karl Blossfeldt, Published by Ernst Wasmuth, A. G., Berlin



THE TECHNOLOGY REVIEW

VOLUME 33

APRIL, 1931

NUMBER 7

NIAGARA'S WAYWARD YOUTH

A Sheaf of Notes on (1) the History of the Falls; (2) How Nature Helped Build a Railroad in the Gorge; and (3) the Need and Possibility of "Nailing Down Niagara"

BY GEORGE A. RICKER

See page 314

SPECTACULAR breaks in the contour of Niagara Falls, like that which indented the straight face of the American side on January 17, have been occurring throughout the centuries. The hard upper crust of the Niagara limestone strata, about 50 feet thick, is underlaid by layers of sandstone and shale, whose softness makes them particularly vulnerable to the combined impact, absorption and frost actions which occur at the Falls. Because of this geological construction, the cornice of the cataract is constantly being undermined and great masses of the crust crash down from time to time of their own unsupported weight.

Within the memory of living folk the Table Rock on the Canadian side went down, and erosion of the so-called Horse Shoe has changed that crest in my recollection from a graceful curve to a deep wedgelike cut. Because of the much greater volume of water flowing in the Canadian channel, all broken rock has been ground to bits and the depth of the river directly underneath the Canadian Falls is estimated to be as great as the height

of the fall itself. The much lighter current over the American side has failed to materially reduce the fallen rock at the base. The presence of this broken rock results in the beautiful ice mountains that make New York Park so spectacular in the winter.

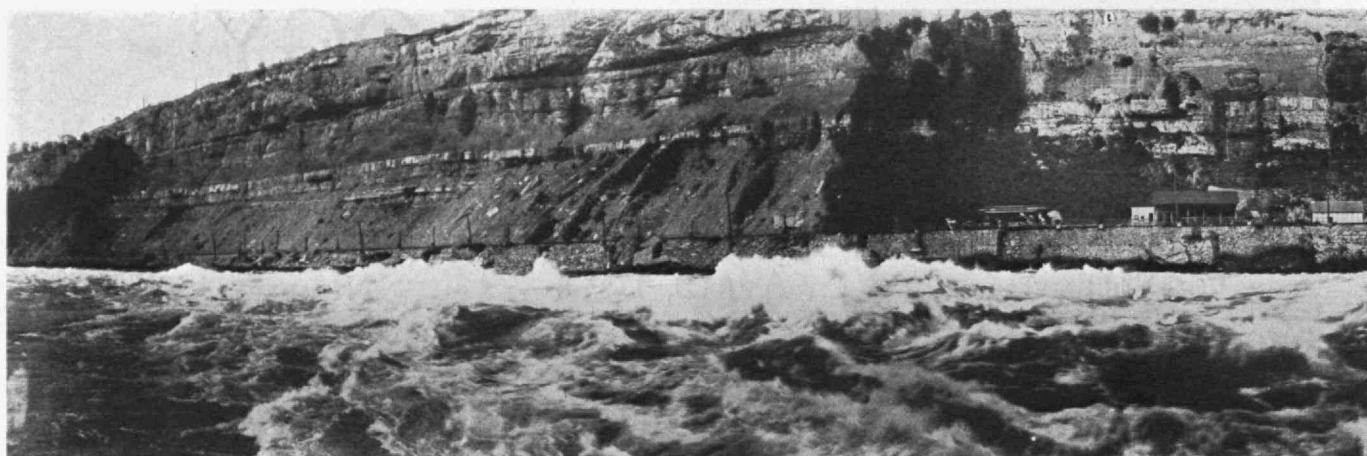


Keystone

ICE IN NIAGARA GORGE. AS DESCRIBED IN THE ADJACENT ARTICLE, IT ALMOST DAMMED THE RIVER IN 1909

As nature counts time Niagara is but an infant phenomenon, 25 to 50 thousand years old. The geologists are agreed that Niagara River began its real work after the retreat of the ice sheet, when the waters of the Lake Ontario basin were drawn down to a level somewhat lower than the present level of Lake Erie. For some thousands of years the total discharge of all the Great Lakes has been through Niagara Gorge, but there is evidence that shortly after the passing of the glacier the upper lakes found outlets through other rivers, and only Lake Erie was drained by the Niagara, then a small stream, very inferior to that of today in its ability to excavate.

To fix the position of the great Falls at any given time by using the present demonstrated rate of erosion is not permissible. The river from the cataract to



THE GREAT WAVE IN THE CENTER OF THIS VIEW OFTEN RISES 40 FEET ABOVE THE ORDINARY LEVEL

the whirlpool is now, obviously, the older section and the Falls may be assumed to have backed up to their present position from the whirlpool in from three to five thousand years. The whirlpool, which marks the turning point in the flow of the river northward some 90° to the right, was apparently formed by the sudden filling up of old St. David's Channel with glacial drift forcing the stream to find a new course.

Thirty years ago, this channel, now scarcely noticed, was plainly marked by the high trestle which carried the electric railroad on the Canadian side around the great pool. Since that trestle has been filled and vegetation has covered the ground, the old preglacial stream bed is rarely noticed unless one's attention is especially directed to it.

The whirlpool itself and the channel from it to Lewiston are picturesque in the extreme — a wonderful job of hydraulic excavation. First, there was probably a series of falls; now there is a fairly uniform grade line with occasional quick drops and beautiful waves, until the river reaches the broad, quiet, navigable waters of the lower river at Lewiston.

MY INTEREST in the phenomena of Niagara Gorge is the result of my experience in building the electric railway which runs from the city of Niagara Falls down into the cañon along the foot of the American cliff. In supervising that engineering job I came to have great respect for Nature's engineering abilities and also found that her capriciousness may sometimes be turned to useful purposes. The building of this railroad was a tough job because of legal difficulties, the inaccessibility of its right-of-way, and the difficulty, under conditions at that time, of getting proper tools and machinery to the work. The company was denied the power of condemnation because it was not, in the sight of the law, a transportation company connecting with other railroads and designed to do business as a common carrier. Without the right to condemn a right-of-way it was found impossible to proceed with the contemplated work as most landowners refused to sell.

This made it imperative to devise a plan whereby connection would be made with the street and steam railways in the city of Niagara Falls and the line run down the bank from the street levels to the river level, passing under the Michigan Central and Grand Trunk railroad bridges in front of their supporting bridge piers. This was to be a standard gauge double-track railroad to be operated by steam or electricity, and to continue along the foot of the east bank of the river to Lewiston, at which point connection would be made with the New York Central Railroad near the steamboat landing, where passengers and goods might be transferred to steamers for Toronto. My survey showed the practicability of such a route and it was adopted at my suggestion. This made possible the organization of the Niagara Falls and Lewiston Railroad Company. Its powers were sustained by the courts in a test case and the work of construction began at the Lewiston end in April, 1893, after several years of negotiation and proceedings to secure the right-of-way.

The first year's work brought the tracks over a distance of five miles, and operation by overhead trolleys was established, using the "lifts" at the Whirlpool Rapids Station as the temporary southern terminal. A second year was necessary



Keystone

AFTER THE ROCK SLIDE ON JANUARY 17. THE HUGE PILES OF ROCK IN THE FOREGROUND FELL FROM THE CORNICE OF THE AMERICAN FALLS



AT THE LEFT ARE THE TWO GREAT BOULDERS DESCRIBED BELOW

to complete the rock cut and heavy rock-bed construction from the rapids to the city of Niagara Falls, together with some unusual bridge construction in front of the piers of the Michigan Central cantilever bridge, and an under-crossing of the tracks of the New York Central Railroad just before entering the city. Current for operation was purchased, so we had only car barns to build.

The railroad for most of its length rests upon the shoulder excavated from the talus, or débris slope, formed through the centuries by droppings from the walls above. Alongside the upper portion of the whirlpool rapids, in the narrower section of the gorge, the tracks are securely founded upon a rock shelf excavated from the Medina sandstone. For a few years this part of the railroad was operated with a single track on a narrow shelf hugging closely the concave cliff. At one point as a result of some conformation of the bottom of the rapids channel a tremendous stream of water had been discharged against the soft sandstone until the cliff had been cut under many feet. Here the roadbed was formed with great rocks, which, it was expected, would make a permanent structure, but the hydraulic attack was too much and the fill melted away. Then heavy timber cribs, securely bolted and drifted to the bottom ledge were tried and the great stream cut them out easily, although similar cribs had withstood the impact of ocean waves. We almost despaired completely, when something wonderful happened.

For some time anxiety had been felt for the safety of the overhanging strata of limestone 200 feet above the tracks at this point. One fine day when the pilot car ran down the road in the early morning two precious boulders, each the size of an eight room, two-story house, lay peacefully in the edge of the rapids just outside the cribs, and the great hydraulic force which had made the big undercut in the sandstone wall was effectually checkmated by the hard limestone in just the place it was needed. Of course, both tracks had been cut cleanly but the trifling expense of replacing them was cheerfully undertaken. To the railroad company, this was a more important fall of rock than any broken from the cornices of the cataract and was the more thankfully received because it had the good taste to fall in the night.

Lest anyone should fear a recurrence of this drop, I hasten to say that at no other place along the railroad is there a similar condition in the upper cliff, and riding on the gorge railroad is just as safe, and perhaps a little safer, than on most mountain roads because of the regular use of the pilot car and slope watchmen. During the past 30 years no accident has ever occurred by reason of rocks dropping from the cliffs above.

No one knows how long the Sentinel Rock has been there. It is a huge boulder of limestone, originally from the top of the cliff above, and stands outside the tracks at the head of the Devil's Hole Rapids. For hundreds, or perhaps thousands, of years it has watched with stern dignity the irresistible flow of one of the greatest and most beautiful waves in the gorge. This short, quick drop in the grade of the river is all that is left of one of the old steps or minor falls in the post-glacial channel between the whirlpool and Lewiston in ancient days. While the average speed of the current through the whirlpool rapids is about 30 miles an hour, the movement of this graceful wave, just above Sentinel Rock, is two or three times as swift. Here also is the narrowest cross section in



Keystone

THE AMERICAN FALLS AFTER THE JANUARY ROCK SLIDE. THE DOTTED LINE INDICATES THE CONTOUR BEFORE THE SLIDE



STORM KING MOUNTAIN ON THE HUDSON RIVER

the great river through which must pass the water flow of 280,000 cubic feet per second coming over the Falls.

NOT a fall of rock, but an almost unbelievable deposit of ice marked our most exciting experience in the gorge. In April, 1909, when ice in great quantities was coming down from Lake Erie a jam was formed in the quiet waters at Lewiston. It made an almost perfect dam and efforts to break it were for some days quite futile. The waters rose until the ice flow was only 15 feet below the floor of the suspension bridge, just above Lewiston village, and level water extended back stream almost to the famous whirlpool. It was a strange sight, the lower rapids completely submerged, the gorge full above the tree tops with ice and water and our little railroad quite out of sight for several miles.

Some headway was being made in breaking the jam when a second dose of ice came smashing down and things looked bad for the railroad and the suspension bridge. At last the pressure of water became so great that the dam broke and the flood passed out leaving much of the ice piled high above the tracks. With great foresight the superintendent of the railroad had, at the beginning of the jam, lifted the trolley wires and feeder cables well up in the trees on the slopes above the tracks and all the copper was saved.

The next problem was to get through the mass of ice, now pretty thoroughly consolidated, in some places 30 or more feet deep. A steam shovel from Niagara Falls solved the problem and for weeks cars were operated between a through-cut of solid ice. The overhead work was quickly replaced and little damage had been done to the tracks or roadbed. Some of this ice, however, remained beside the tracks until well into the summer. So far as I know, nothing quite like this has ever happened to any other electric railroad; perhaps it could not, as there is only one Niagara Gorge.

During the building of the railroad an experience with rock that rose and fell came near disturbing peaceful relations with our Canadian neighbors. While blasting from the cliffs below the old railroad suspension bridge it was sometimes necessary to drill holes high up on the

sides as much as a hundred feet above the grade, in order to make the shelf upon which the tracks were to be laid. The contractors had been repeatedly warned to use small charges, but it seemed so easy and attractive to throw off large masses that the temptation was strong to overlook instructions. One early morning blast, quite evidently larger than permitted, caused a barrage of Clinton limestone fragments to fall in the then town of Clifton across the river in Canada. There was consternation in the town and in the camp. One of our contracting firm, himself a Canadian-Irishman, hurried over to interview the mayor and survey the damage. Little harm was done beyond throwing a scare into some of the unsuspecting inhabitants at breakfast, but the wrathful mayor insisted upon reporting the unfriendly act to the provincial capital. In time the complaint, duly ornamented with much red tape and many seals, reached the State Capitol at Albany and a special Deputy Attorney-General

was delegated to make an investigation. All this took many days and when the "Judge" reported back, weeks had elapsed, everything was amicably adjusted, and the war was over. The humiliated but wiser contractor had meantime made his peace with the mayor and assured us, with a touch of true Irish wit, that there would not have been any complaint "at all, at all" if a large rock had not gone through the Canadian custom house from roof to cellar without paying duty.

THE recent crash at Niagara has started reverberations of the old argument: "How long will it take the Falls to reach Buffalo?" a query as sensible as the more ancient one: "How old is Ann?"

Assuming that this old world is going on for at least a few thousand years more and that civilization is to continue, it is unbelievable that the Falls should ever be allowed to reach Buffalo, because among other little things that would happen Lake Erie would be drained. Can it be supposed that engineering science would ever permit such a catastrophe without a struggle?

I had thought I might be the first to suggest that Niagara Falls should be nailed down just where they are, when to my chagrin I found that Professor N. S. Shaler, noted American geologist, had said it more than 30 years ago. In the "Niagara Book," published in 1901, in discussing this very question of what might be done with Niagara Falls, Shaler wrote: "New channels can be excavated which will divert the stream to some point on the line of the cañon where a fresh field of excavation can be provided for the cataract; *or if it seems worth while (the italics are mine) an excavation can be made beneath the stream at a point above the falls and a hard masonry support provided for the Niagara limestone, which, as we have noted, forms the cornice over which the water plunges.*

"If we can judge the motives of the future by those of the present," Professor Shaler continues, "the decision as to the eventual fate of Niagara will rest upon economic conditions. It is indeed most likely that the arrest in the southward march of Niagara will be brought about by the diversion of its water to the turbines which drive the dynamos."

(Continued on page 348)

CAUSES OF MISBEHAVIOR

The Possible Part Played by Disorders of the Ductless Glands in the Behavior Problems of Childhood

BY ALLAN W. ROWE

See page 314

IN RECENT YEARS it is a frequently recorded observation that disorders of the so-called ductless glands seem to be associated with a variety of personality changes. Some of the more optimistic and less critical modern writers carry the implications of this observation to the point where they refer all personality patterns to variations in an intricate and delicately adjusted endocrine concert. Others, with a greater respect for the limitations of factual evidence, in discarding these pleasing and wholly unsupported speculations, none the less trace relationships between disturbed function of single endocrine glands and those types of personality change which may engender a behavior problem.

To the student of the endocrinopathies certain individual personality patterns strongly suggest certain definite disturbances of the level of function in single endocrine structures. The shrill, insistent egocentricity of the ovarian failure, the sullen truculence of the underactive thyroid patient, and the querulous irritability of the sufferer from Addison's disease (the adrenals) are among the better defined.

Needless to say the scientific observer does not erect a diagnosis on the sole foundation of a defective personality; human experience demonstrates daily that such conditions are widely distributed among those possessing completely intact glandular structures. There is, however, a sufficient degree of association to warrant in some measure the more conservative position noted above, and to explain — though not to excuse — the less trammelled speculations of the uncritical.

A logical corollary to the foregoing is the inference that many of the immediate behavior problems of the young, conceivably deriving from similar personality difficulties, may have their origin in constitutional defects of the material body. Such an attitude has at least the sanity of a just recognition that protoplasm is concerned with functions other than that of reproduction, a position sharply at variance with the Freudian concept of all life reduced to a single and very common denominator. If there be constitutional elements, a dispassionate, critical analysis should at least suggest their probability even though the present limitations of knowledge forbid an absolute demonstration.

There are two major factors which come under consideration. First, there is the physical condition which can be expressed in material terms after careful diagnostic study has demonstrated the presence of organic change or of functional aberration. The second is the behavior problem itself which from its very nature is insusceptible today of an equally sharp definition since so many of the composing or substantiating factors are of a wholly subjective character. The final form which an opinion

assumes is no more than the integration of a number of largely subjective elements. One aspect of maternal pride, for example, leads the fond parent to stultify her intelligence and declare truculently that her imbecile offspring is as normal as the healthy progeny of her neighbors. Another type of parental reaction leads to the pessimistic designation as feeble-minded of the child who is demonstrated by a careful, impersonal, psychometric study to be of average, normal intelligence. It must always be remembered that the history of the individual case is the most subjective and least authoritative of the various evidences marshalled to define the patient's actual condition. Many human qualities come into play in the content of a history. Actual failure of memory which may lead to omissions of vital import, variations in the emphasis laid on the individual item severally by the reporter and the recorder, and frank misrepresentation of facts are all elements tending to produce data both positively and negatively misleading. Another very common source of error is the human tendency to focus on some single outstanding episode and to associate it in a causal relationship with the symptomatic picture. Where such associations derive from an honest lack of analytical perception, careful questioning may establish a chronology that will eliminate the putative causal agent. Less simple is the case where the attribution is disingenuous as in those instances where legal redress for injury is sought. In the case of a child there is a multiplication of difficulties as some of the subversive factors bulk large in the patient's own report, while others operate in both senses in coloring the story of the accompanying parent or guardian.

BEHAVIOR problems as a whole may be broadly subdivided into three major classes. The term in itself is a highly elastic one and the criteria of designation extremely variable. Broadly speaking, however, we have a primary group in which the designation rests upon a definite subversive act directly classifiable as an offense against law. In this category fall such acts as theft, assault, incendiarism, vagrancy, homicide and similar recognized misdemeanors and crimes. A second group comprises those acts which deviate from convention or run counter to the local mores. In this group fall such behavior cases as the sex delinquents, and those whose acts are the outcome of an abnormal psychology. While certain of these may be classified as misdemeanors of an established legal status, the delimitation of their boundaries is less precise and they are far more the expression of local rather than of general interdictions. A mode of dress, for example, which would constitute a flagrant exhibitionism in one community could be compatible with a shrinking modesty in another.

THE ENDOCRINE GLANDS

There are but few of the glandular structures of the body which have been demonstrated to produce a so-called internal secretion which influences the functions of other portions of the body. These few are enumerated below.

Gland	Position	Function
1. Pituitary (Hypophysis)	In cranium directly behind nasal cavities, in a bony saddle formed by base of skull. Consists of four parts morphologically differentiated. Size of olive.	Plays an important part in the regulation of growth, of development, and of sexual activity. Function of anterior and posterior lobes somewhat understood and several active principles (hormones) traced to each. The <i>infundibulum</i> and <i>pars intermedia</i> not as yet differentiated functionally.
2. Thyroid	Located in neck just above chest bone. Often enlarged as goiter. Consists of two lobes, each about size of egg, but thinner, and connected by a cross-bar making gland H shaped.	Forms thyroxine, which facilitates oxidative processes in body, and thus regulates general level of metabolism, influencing growth, development and sexual activity. Probably other hormones, not as yet demonstrated with certainty.
3. Parathyroids	Varying number, four being average. Size of pea. On back and top of thyroid gland.	Only function known, to play an important part in regulating certain phases of the calcium metabolism.
4. Islands of Langerhans	Lie scattered about in substance of pancreas in abdomen.	Oxidation, storage and use of sugar. The primary regulator of carbohydrate metabolism.
5. Adrenals	Two glands, each one located immediately above kidney. About the size of two fingers.	Medulla of gland reinforces sympathetic nervous system. Cortex is concerned with various regulatory processes, not understood.
6. Gonads	Genito-urinary tract.	Female glands highly important after maturity. Among the active regulators of metabolism during all of adult years. Male glands important in childhood; apparently no endocrine activity after maturity. Probably show properties similar to female glands in childhood.

The pineal, the thymus, and the spleen are possible organs of internal secretion although their status is a dubious one. Endocrine activities may exist in other portions of the body, but evidence is very incomplete and their inclusion in the ductless glandular system is in largest measure speculative.

The third and certainly largest group of behavior problem cases are even less well defined than the foregoing and many times depend upon a somewhat nebulous indictment that derives its real content from the reporter's own interpretation of the act. In such a group fall the a- and anti-social children, the morose, the disobedient, the egocentric and the cruel. Here ordinary standards of behavior influence unduly the classification of the child in both a negative and a positive manner. It is safe to say that many of the problem children falling in this group would be promptly eliminated by a broader and more genial outlook on life on the part of the elders, and equally, that many other children would be placed in this category by the community at large though reported by the parents as wholly normal and well-behaved children. Since a subversive act may be the major feature of one behavior problem, while a mental attitude or reaction constitutes the basic factor of another, a clear-cut definition is at best extremely difficult if not impossible.

Analysis of attendant circumstances as determining standards constitutes yet another highly important factor of which due cognizance can be taken only in the rare case where it has been possible to compile a complete, authoritative, and intelligent social history. For

example, the child born of criminal parents and trained from earliest years to steal, must be differentiated sharply from that other child, the offspring of intelligent and highly ethical parents, whose upbringing has been exemplary and yet who ultimately becomes a thief. The overt act in the two cases is identical, the contravention of correct behavior the same, but the underlying mechanisms in the two instances are sharply divergent.

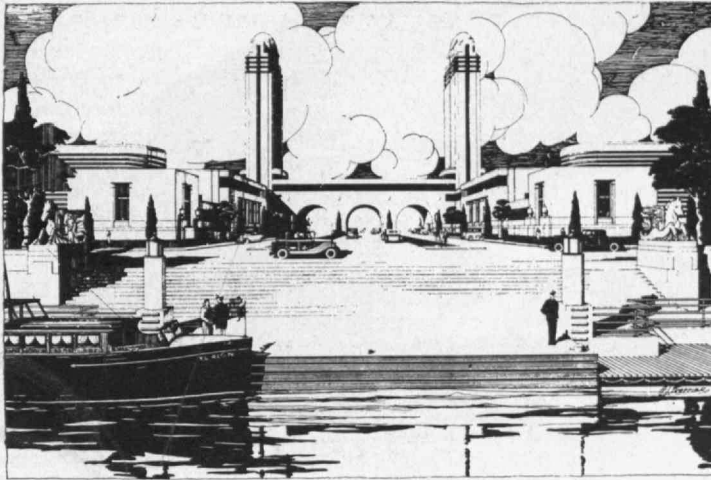
Enough has been said to indicate the relatively indeterminate character of the so-called behavior problem in a majority of children concerning whom the report may be made. Even the most searching enquiry may fail to bring to light some very important contributory factor in the determination of the final behavior pattern, a knowledge of which would influence profoundly the final interpretation of the underlying mechanism.

In the present consideration one is constrained to accept the designation of the reporting agency, be it physician, social worker, guardian, or parent, recognizing the varying degrees of objectivity with which the individuals in these several groups approach the problem. In the present survey these variables detract from the authority of the final statement and due allowance must be made for this in any generalization.

THE major thesis, as indicated in the introduction to this paper, was an attempt to ascertain if there were demonstrable constitutional factors in a group of children presenting the common designation of a behavior problem. The material selected for this survey was a series of 4,000 consecutive cases all of whom had received a careful and comprehensive diagnostic study. From this initial group the records were selected of all patients who were less than 17 years of age. This line of demarcation is an arbitrary one, but experience has shown that the child who has not matured before the seventeenth birthday is to be regarded as falling outside the somewhat elastic zone of the normal as related to this particular attribute. The selection yielded a group of 650, the ages ranging from four to (Continued on page 353)

*The Regional Survey of
New York*

RIGHT: AN ARTIST'S
CONCEPTION OF A FOR-
MAL ENTRANCE TO THE
FUTURE CITY IN THE
HACKENSACK MEADOWS
(N. J.)



Courtesy New York Times

BELOW: THE PROPOSED
AREA TO BE RECLAIMED
IS SHADED. IT IS AP-
PROXIMATELY TWICE AS
LARGE AS MANHATTAN
ISLAND

A CITY OF TOMORROW

*The Gigantic Project to Reclaim the Hackensack Meadows (N. J.) and
Build a Great City There*

By WILLIAM P. CUTTER

See page 318

THE traveler leaving New York City for the West over the Pennsylvania, Lackawanna, or Erie Railroads finds after a few minutes that his train is passing through a desolate region of treeless marsh. There is little to relieve the monotony of the landscape except a few dingy manufacturing plants. To the north and south there is nothing but this dreary waste; two sluggish rivers are crossed, and there are numerous side-tracks with freight cars on them, but there are no inviting homes, no lawns or gardens, no cultivated fields. This is the dank, forbidding Hackensack Meadow region.

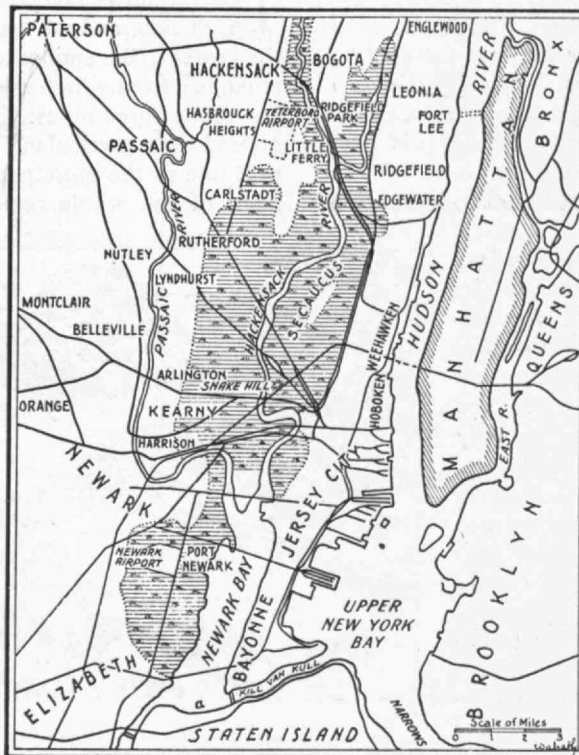
The meadows stretch many miles toward the northeast with only a few isolated minor elevations. There are in all about 45 square miles of marsh, an area much greater than that of the island of Manhattan, which is only three miles distant from the meadow's eastern boundary.

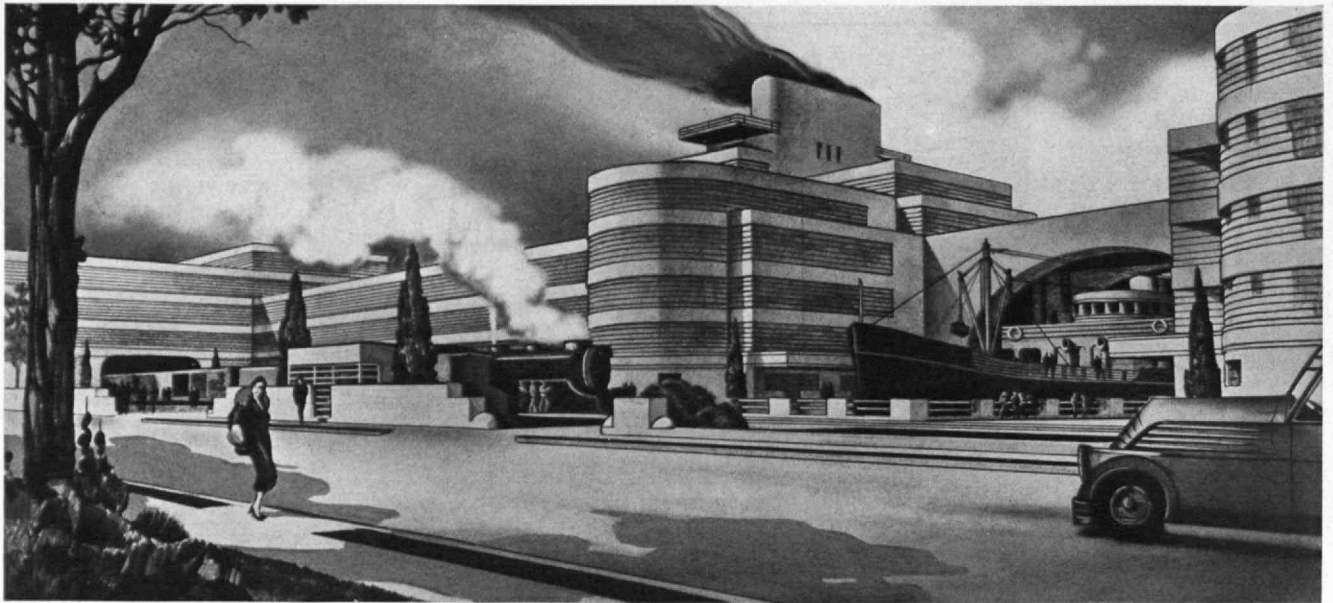
Because the region is easily accessible from New York City by rail, motor, and bus, men of foresight have long recognized its potential value. Indeed, it is only a few miles from the site picked out by Alexander Hamilton, the father of American manu-

factures, for a great national industrial center. He recommended the establishment of a city at the falls of the Passaic. The Society for Establishing Useful Manufactures, the first incorporated society in New Jersey, was founded at his suggestion to carry out the idea and it employed Major L'Enfant to draw plans. It is said that he drew streets for the New Jersey city 200 feet in width,

stretching alike over steep hills and over deep gorges. It was a magnificent plan, unfortunately never carried out. The numerous industries dwindled down to one cotton mill (the first outside of New England), and this burned down after a few years. The city in the meantime had acquired other industrial plants, and the result is the busy metropolis of Paterson.

Several official reports have been made from time to time advocating the reclamation of this vast meadow, but until recently the whole project has seemed to be such a stupendous and expensive undertaking, involving such intricate questions of law, engineering and finance, that no plan was broad enough in scope or sufficiently developed in detail to assure probability of action.



*The Regional Survey of New York*

AN IDEAL INDUSTRIAL SECTION ENVISIONED FOR THE REGIONAL PLAN OF NEW YORK

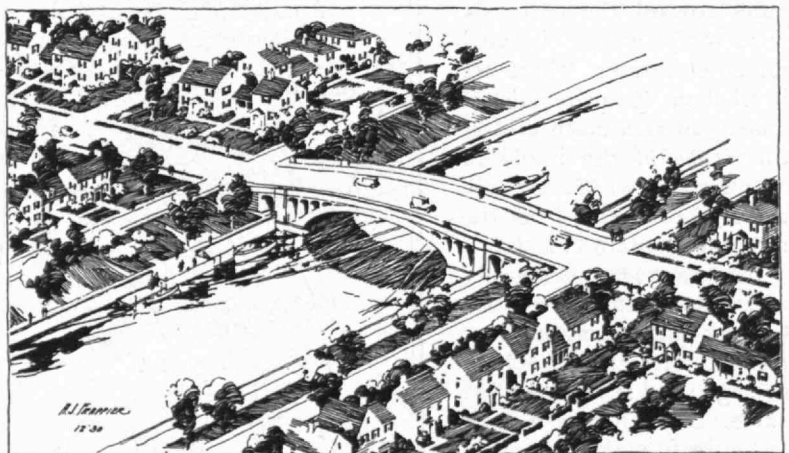
Several years ago, however, a body was constituted by private initiative to undertake the enormous task of making a general survey of the whole metropolitan region of which New York City is the center. This body was luckily free from political control, was adequately financed by a grant from the Russell Sage Foundation, and its personnel was of such a high type that complete reliance could be placed on its altruistic attitude. Its aim was to develop something that would make this region not only the most prosperous community in the world, but the best community to live in.

The result of several years' work on the part of this organization is "The Regional Survey of New York and Its Environs," a series of volumes replete in detail, representing the most extensive survey ever made of a metropolitan area anywhere. After the first fact-finding compilation, two other volumes were begun, outlining a comprehensive plan for the development of the whole region. One volume has been issued, stating this plan graphically; the other is ready for publication.

One of the major projects given the fullest consideration in both of these studies is for a systematic utilization of the whole Hackensack Meadow region. The Regional Plan does not limit its suggestions to the development of a purely industrial district, although previous studies had been limited to this narrow conception. The meadows become, under the Regional Plan, a complete new city, including not only a great industrial center, but a deep-water port, railroad terminals and classification yards, highway systems, park systems, recreational areas, airports, and a great residential district. Of course, the Board can do no more than plan for such a development as it has no authority to execute such a prodigious project. Indeed, up to the present writing, no such authority has been constituted, but, as we shall see later, a movement is on foot to organize such a body.

The Hackensack Meadow region extends northeasterly from Newark Bay, a distance of approximately 12 miles, with an average width of four miles. On the east are the hills on which Jersey City, Union City, and other cities are built, while directly east of these hills is the Hudson River. On the west are Newark, Arlington, and Rutherford; and to the north is Hackensack, from which point the tortuous, sluggish, muddy Hackensack River meanders down to Newark Bay, where it joins the Passaic River. At the southern extremity of the meadows are the sites of those terrible examples of industrial towns, Harrison and Kearny.

THE meadows average a height of only four feet above high tide, and are often covered in times of flood. In the center is the eminence of Snake Hill (very suggestive in name), from which a low ridge extends northeastward for about three miles. The whole region is a breeding ground for a particularly vicious variety of mosquito, so that one of the most potent arguments for the development of the whole region is that it would mean the

*The Regional Survey of New York*

A SYSTEM OF CANALS AND PARKWAYS ADD TO THE BEAUTY OF THE RESIDENTIAL SECTION OF THIS WELL-PLANNED CITY

control of this pest. Frogs and snakes are also abundant. The vegetation is largely coarse sedge. The meadow serves one useful purpose in its upper reaches: it is a good place to get rid of worn-out automobiles. The Regional Plan advocates the division of this region into three great sections. The southernmost would include the port, with a series of wharves and docks, and a ship canal made by straightening the Hackensack River, dredging it, and having a large turning basin at the northern end. Here warehouses would be erected, and ocean and railroad terminals coördinated. Along this canal and subsidiary side canals would be sites for industrial establishments, with railroad sidings and highway connections, so that raw materials might arrive by water, rail or road, and finished products could be shipped by one of these same methods. It would be quite possible to so group these industrial plants that each major industry would occupy a certain area.

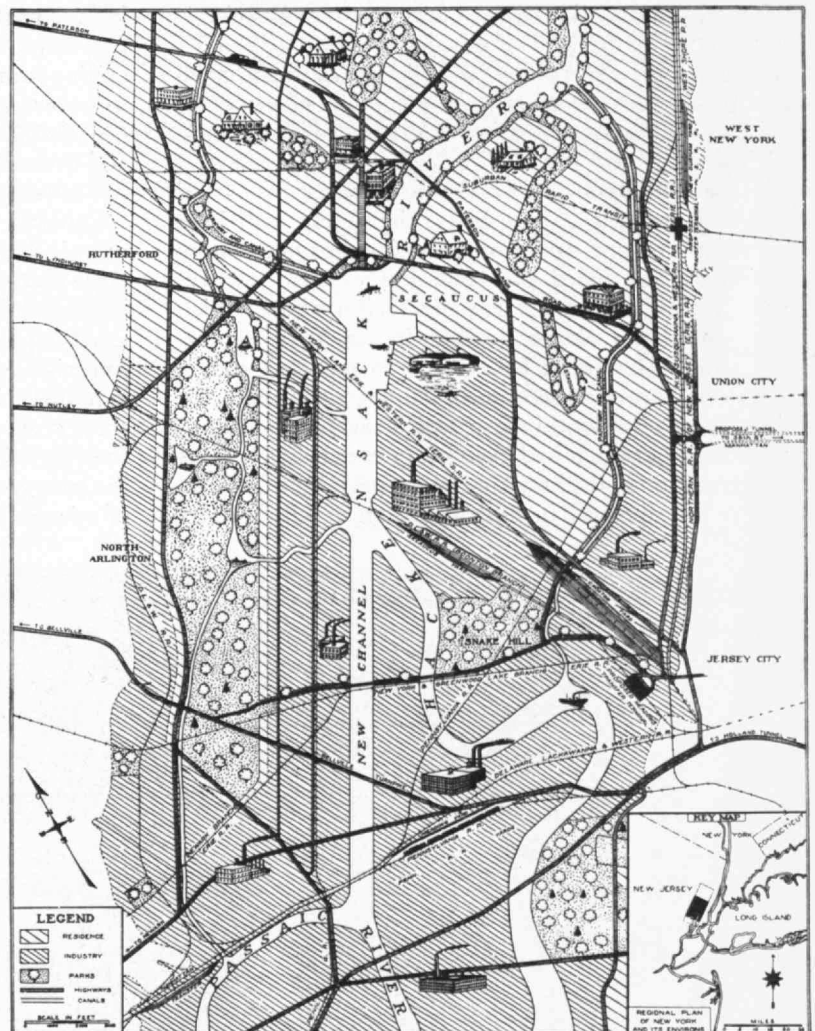
North of this industrial area would be a second district devoted to recreation. Here there would be sites for great athletic fields and stadia; buildings for international expositions and for industrial museums; golf courses, tennis courts and swimming pools; landing fields, hangars, and garages for the bus lines which would serve the region. The western border of this second region would be devoted to a park, with an area larger than Central Park, with wide roads and narrow bridle paths; arboretums, formal gardens and greenhouses; a zoölogical garden and an aquarium; playgrounds for children, rest houses and restaurants; comfort stations and shelters.

The northern third of the region would be devoted to residential towns which the Regional Plan proposes to develop by a community village system, such as has characterized some of the other residential developments by the Russell Sage Foundation. By this system, community life is fostered, open spaces are provided, and, by so placing the main boulevards that they are outside the residential centers, safety from automobile traffic is secured. There is no reason why homes in such a section should not equal in attractiveness the suburban residences in the Jersey Hills. Of course, two questions at once arise — whether the space thus divided will furnish sufficient housing for the industrial workers in the manufacturing section, and whether they could afford to live under such favorable conditions.

The whole region, of course, would require very careful planning of its highway system. There would be of necessity a system of north and south roadways, now entirely non-existent. Relocation of railroads would be necessary, and a connecting railroad or railroads would have to be constructed. Bridges over the Hackensack and the cross canals would be required, and some of the existing bridges would need to be redesigned to allow the passage of

vessels. Access to the open ocean might be, as at present, through the Kill van Kull at the north of Staten Island, or by the Arthur Kill to the west of that island, but it is more probable that the final plan would take advantage of the low spot in the Bayonne Peninsula at the point where the Morris canal now passes and the Lehigh Valley Railroad turns to the west to cross Newark Bay.

SUCH is, in general, the Regional Plan suggestion for the development of this region. It is well worked out, but there are points open to criticism. With this plan before it, the New Jersey Meadows Reclamation Commission has submitted to the Legislature in 1930 and 1931 its own plan. It differs from the Regional Plan in some very essential matters. In the first place, the Hackensack meadows are not the only ones around Newark Bay, for Newark itself has some meadows, and it has developed its own port. It can hardly be conceived that any plan for the development of this meadow region which did not take into consideration this very live and progressive city would receive acceptance. Again, the Regional Plan did not involve the establishment of a great ocean port independent of the Port of New York. If, however, the Newark Bay ports are to be simply (Continued on page 348)



The Regional Survey of New York

THIS MAP SHOWS THE BALANCED APPORTIONMENT OF THE LAND FOR INDUSTRY, RESIDENCE, RECREATION, AND BUSINESS USES



THE TREND OF AFFAIRS



Clinical Notes on Aeronautics

IT IS being bruited abroad that the aeronautical industry suffered from the depression in 1930 as severely, if not more severely, than most American industries. What are the facts? The large holding companies specializing in aeronautical securities, of course, suffered further depreciation in the value of their holdings due to further depression in the stock market. The manufacturers of commercial planes were completely paralyzed, and the sales in this class that were made were largely disposals of the excessive production of 1929.

Local operating companies at commercial or municipal airports likewise suffered heavily in their operations. Two general classes, however, showed growth and prosperity to a degree almost sufficient to make the year at least passably satisfactory for the industry as a whole. One was the continued production of aircraft for the Army and Navy carried on by a few large factories specializing in that field, and the other was the remarkable development in the field of scheduled transportation.

The general features of the past year were the continued development of mail routes, the extension of passenger services, and the strengthening effects of the Watres Act, which enabled the Post Office Department to contract with the passenger lines for the carrying of partial cargoes of mail on a space basis; the purely mail lines also being changed to the same basis of payment from the former one based on poundage of load carried. Through this mechanism the air mail system, which was essentially a single transcontinental route supplemented by feeder lines, has now been replaced with a network of three transcontinental lines and connecting links, which in general offer passenger service as well as mail. The lines which had been inaugurated the previous year offering combined rail and plane passenger facilities continued to operate, in most cases, on a substantially

more efficient foundation than during 1929. Entirely new in the field were the developments of short and middle distance lines, namely, the air ferries which operate across San Francisco Bay, and the already famous New York to Washington line which is operated every hour on the hour. This last line has been achieving remarkable successes, carrying as many as 5,000 passengers a month, and similar services are being inaugurated in the Middle West and are planned for other regions.

The general statistics on transportation for 1930 are remarkable for two reasons: one for the sheer bulk of mileages achieved, and the other for the almost incredibly high safety record for its operations. Never again will there be the least excuse for the generally credited statement that the United States is lagging behind Europe in any phase of air transportation. Scheduled air transportation operations in the United States last year reached a total of 33,403,000 airplane miles. The rest of the world together, as closely as can be estimated, turned in a corresponding figure of about 31,000,000 miles. In passenger mileage the American figure was the surprising one of 108,000,000, while the other countries together totaled somewhere in the neighborhood of 60,000,000. In express and mail traffic the United States and the entire world both reached a little over 3,000,000 ton-miles.

Certainly no less gratifying is the outstanding safety record. During the past year, in spite of the unusually large totals of operations, there were only 26 fatalities on the scheduled air lines in the United States. Never has anything of this sort been previously achieved. The Imperial Airways, which holds virtually a transport monopoly in England, operated during one period of three years without a fatality, but the total flying during that period was roughly about 1/10 of that done during the past year in the United States. The important figure, of course, is that based upon passenger miles, and the



LAYING A NATURAL GAS WELDED PIPE LINE

Courtesy Republic Steel Corporation

figure achieved was 0.24 passenger fatalities per million miles. Stated more graphically, any one passenger's chances of meeting fatality on an American air line is roughly once in four million miles of travel. It has been pointed out by Edward P. Warner, '17, Editor of *Aviation*, that the above record would have been even more remarkable except for a number of severe accidents which occurred in January, 1929, and that if the 12 months between February 1, 1930, and January 31, 1931, are taken, there were only eight passenger deaths, or a figure of almost 15 million passenger miles per fatality.

Some types of statistics accumulated over a short time are open to the suspicion of mere chance. If flying conditions in the United States were the same as they were five years ago, it would be easy to discount many of the above figures, especially those on safety. Such, however, is not the case. Numerous and complete analyses of airplane accidents seem to allocate their causes into four main divisions: those due to error of judgment and inexperience of pilots; those due to airplane or engine failure; those due to weather; and those due to being forced to descend on unsuitable areas, after one of the two preceding causes. The United States has made remarkable progress in overcoming these difficulties. There is no cure for inexperience except flying and as can be seen above, we do more flying, both scheduled and unscheduled, than the rest of the world put together. The average transport company at the present time would hardly consider employing a pilot who had not at least 2,000 hours of flying to his credit. Five years ago there was hardly a score of men in the United States outside the services with such totals. Today there must be four or five hundred. The Department of Commerce has, through its licensing and inspecting activities, made tremendous strides toward the elimination of engine and plane failures.

The design of the plane is carefully checked against rigid standards, its manufacture is supervised, and its operations must conform to certain laws of inspection and control. Nothing has been done as yet toward the controlling of weather, but a great deal has been done in the way of weather reports, navigation facilities, and radio communication. The Weather Bureau now operates about 400 special airway weather stations and the Department of Commerce broadcasts complete radio reports every hour. Almost every transport plane in the United States is now equipped with radio receiving apparatus and the vast majority of them are equipped with two-way radio. The radio beacon has been installed on most of the airways of the United States and has proved a great help.

In the last field, that of airports, great progress has been made. The United States now has about 1,500 airports. One possible standard which has been proposed is that there should be at least one field for every 600 square miles of area. Seven eastern states have already achieved this. Another seven are in the next lower group, that is, having one for every 1,200 miles, and many other states have almost their full complement of airports. For example, the aeronautically advanced state of



Galloway

EIGHTY-FIVE STORIES ABOVE THE STREET. FINISHING NEW YORK'S EMPIRE STATE BUILDING

Kansas with its prairies has little need for specially prepared and recognized intermediate landing fields, which types swell the total for the other states, and therefore does not receive its full credit.

The governmental agencies, the executives and personnel of the air lines, and even the investor whose funds have made 1930 American air transportation possible can be proud of their success.

Chemicals from Coke

THERE truly seems to be no limit to the variety of organic substances which may be synthesized now or in the future by simple processes from the elements or from simple, cheap, and abundant materials. From carbon monoxide (or dioxide) and hydrogen, at 300-350° C. and a pressure of about 3,000 pounds per square inch, it is now possible to produce synthetic methanol at a market price which is about one-half that of a few years ago. Approximately seven million gallons were thus produced in this country in 1930, about as much as that which came from the wood distillation industry.

Under slightly different conditions the same materials may be made to yield the higher alcohols — ethyl, propyl, and butyl; and it is reported that plants are now practically ready to commence the manufacture of higher alcohols, probably isobutyl alcohol, by this method. Under other conditions it is possible to convert carbon

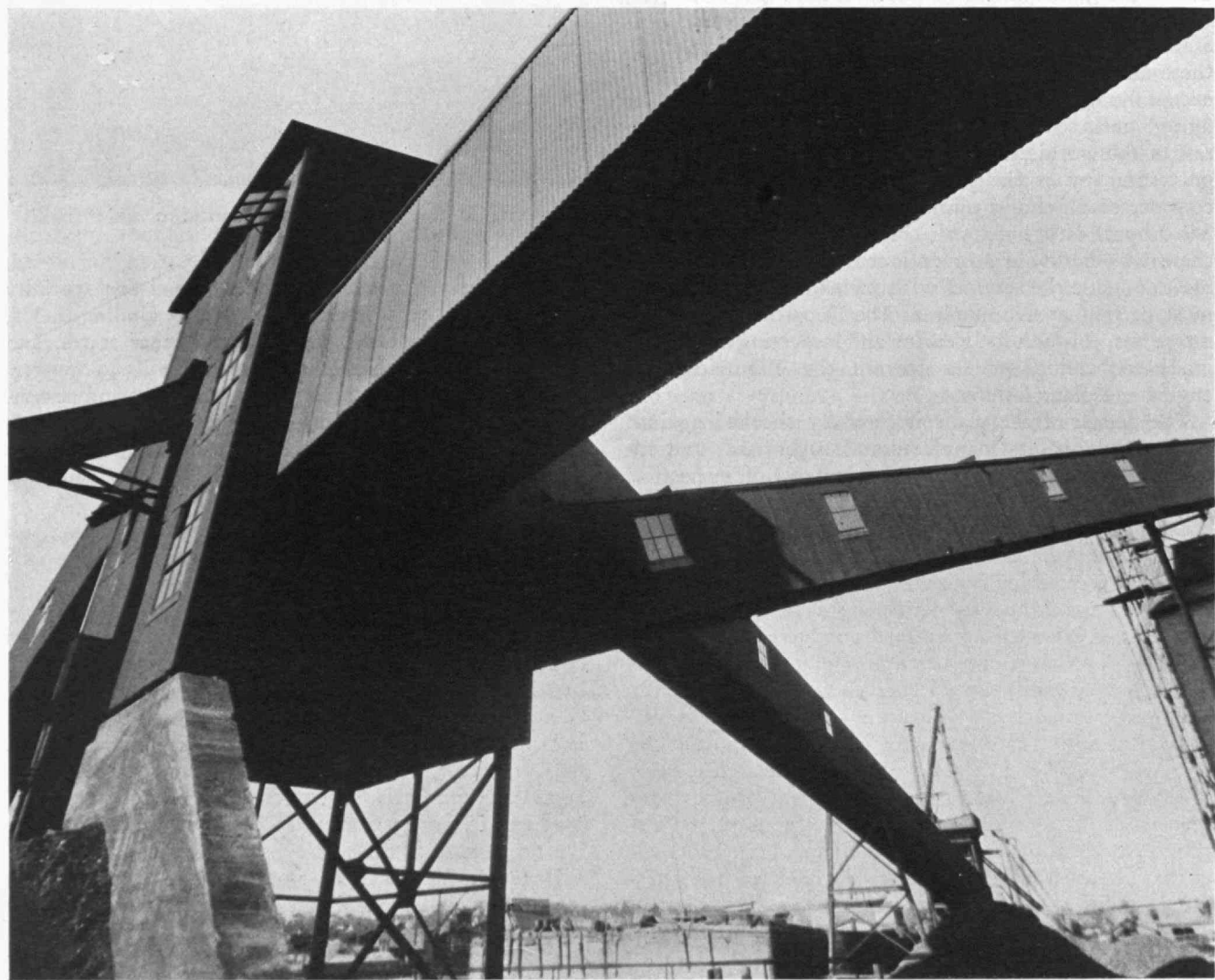
monoxide into hydrocarbons suitable for motor fuel, into aldehydes, esters, fatty acids, and possibly artificial rubber. If the necessity should ever arise, it will no doubt be possible to manufacture edible fats from coke.

Practical syntheses, not involving high pressures, have been in use for some years for the production of ethyl alcohol (good natured alcohol), acetic acid (the acid of vinegar), and acetone (which finds wide use as a solvent) from acetylene and, therefore, from calcium carbide or from limestone and coke. The cracking of petroleum to increase the proportion of it which shall be available for motor fuel leads to the formation of ethylene as a by-product and this by practical syntheses is now being converted into a variety of useful substances. One of these is ethylene glycol, which is used in making dynamite and is familiar to automobile users under the name of Prestone. The other is di-ethanol-amine, which is used in the soap industry and as an acid absorbent.

And this is by no means the end of the story. The vast and gratuitous energy of the tropic sun still remains to be exploited, both as a source of heat and mechanical energy and as a source of chemical energy available for the syntheses which are now carried out only by living plants.

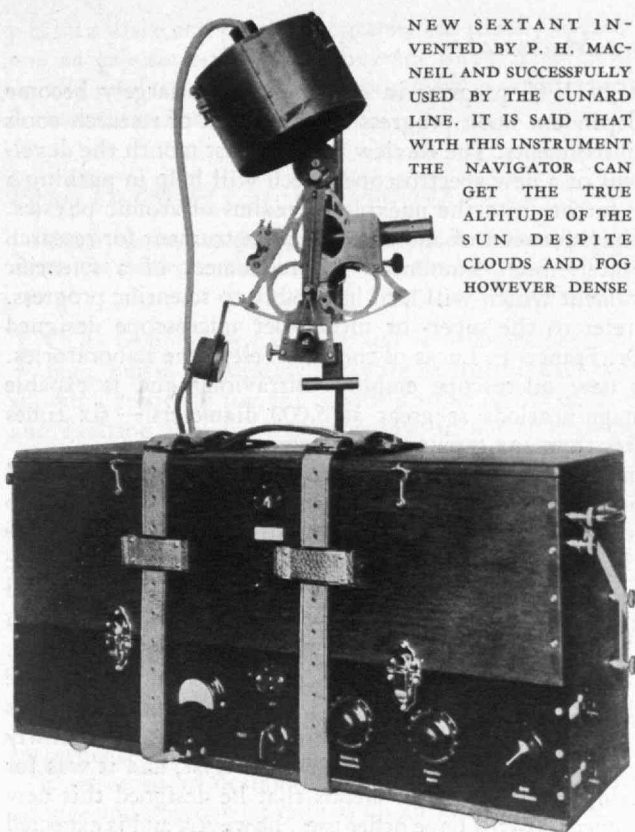
High pressure syntheses depend for their success upon the fact that the products of the chemical reaction occupy a smaller volume than the raw materials. Since the formation of the products is accompanied by a diminution of volume and since an increase in pressure tends to produce a diminution in volume, an increase in pressure tends toward the formation of the products. At a given temperature the equilibrium between the simpler reacting materials and the more complex products which they form — or between the heavier products and the lighter reacting materials into which they break down (for the reactions are reversible) — is such that high pressures favor the heavier materials and low pressures the lighter ones. The larger molecules, which form at one temperature if the pressure is high, decompose at the same temperature into smaller and lighter molecules which occupy a greater volume if the pressure is low.

Frolich's (Per. K., '23) success in the study of high pressure synthesis has been largely dependent upon his recognition of the importance of this bit of theory. The reversible reaction of formation-decomposition is one reaction. Catalysts hasten it in both directions but do not alter the conditions of equilibrium. A catalyst which will lead at high pressures to the formation of the



Galloway

PROBLEM IN DESCRIPTIVE GEOMETRY OR HOW A CAMERA WAS MADE TO SEE A COAL-CONVEYING SYSTEM IN STAMFORD, CONN.



NEW SEXTANT INVENTED BY P. H. MACNEIL AND SUCCESSFULLY USED BY THE CUNARD LINE. IT IS SAID THAT WITH THIS INSTRUMENT THE NAVIGATOR CAN GET THE TRUE ALTITUDE OF THE SUN DESPITE CLOUDS AND FOG HOWEVER DENSE

desired product will lead to its decomposition at the same temperature and at low pressures. By studying the effect of various catalysts at atmospheric pressure upon the decomposition of a substance, Frolich has been able to determine what their effect upon its formation at a higher pressure would be. By studies upon pure substances suspected of being intermediate between the raw materials and the product, he has been able to gain an insight into the course of stepwise reactions.

Metal Foils

OUT of the art of the goldbeater, whose shimmering gold leaf decorated the sarcophagi of the ancient kings of Egypt, has grown the modern metal foil industry which now produces thin sheets of various metals for an ever-increasing variety of uses, both artistic and utilitarian. Homer sang of the beater and his gold leaf; a modern singer with Homeric tastes would tell not only of gold, but of delicate leaves of silver and copper, brass and lead, and aluminum.

The modern foil industry has developed from the production of lead for paints, one of the first modern industrial foils being a thin strip of lead foil useful in decorating Christmas trees. The industry, whose earnings last year amounted to more than \$300,000,000, now makes metal foils which are used for wallpaper, for insulation, and for wrappings about cigarettes, candy, and various food products.

Other practical applications in recent use are for electric motors, the construction of electrical apparatus, including condensers, and in the radio industry. As an insulator for refrigeration, the bright metallic surface of the foil reflects heat and retains cold. As a covering for boilers, it reflects heat back into the boiler, thereby increasing its efficiency. In this field foil has become so important that it may replace asbestos and other boiler insulating materials in many instances because of its durability, light weight, and low cost. Another recent use is in the development of a photographic flash lamp which employs aluminum foil in the production of a brilliant light of great actinic strength.

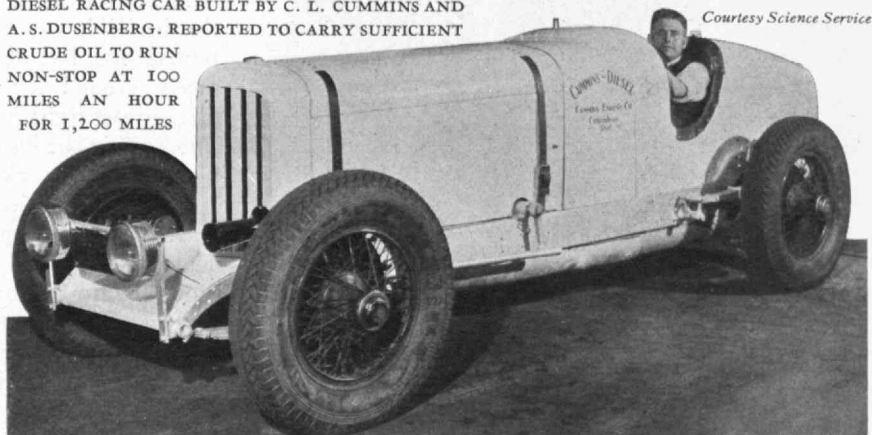
The classification into which the modern foils fall is between leaf and sheet metal. That in most common use is tinfoil, which consists chiefly of lead, and is the material used in wrapping cigarettes, tobacco, and confections. It was early discovered that foil, by its contrast or peculiar brightness, heightens the attractive qualities of various objects. In the arts, for instance, thin sheets of metal, Dutch foil, are widely used as a backing for artificial gems or for increasing the natural luster in stones. Much of this foil is silvered copper, a combination often used in the production of mirrors and various ornaments.

The Japanese have produced variegated foils which give the effect of "damaskeening" and which are produced by placing together thin plates of different metals, including gold, silver, copper, and alloys. These thin sheets are soldered in a particular order, and the pattern is then hammered on the edges. When rolled or hammered into the form of foil, the result is very beautiful.

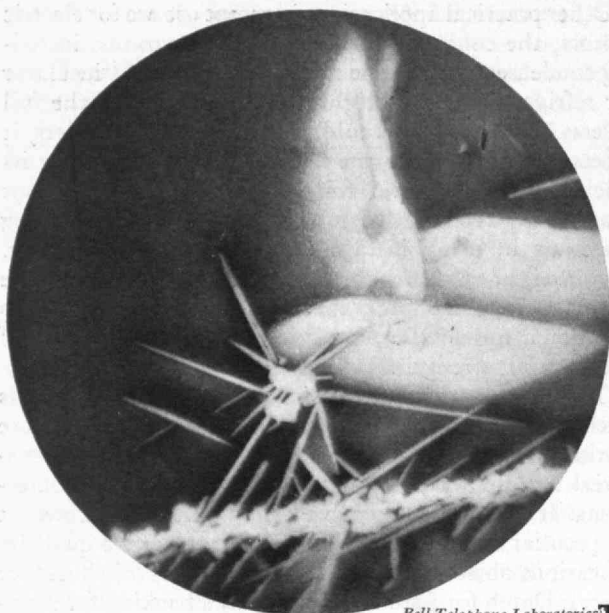
In spite of the fact that most modern foils are produced by machinery, the goldbeater still reigns supreme in his ancient art of producing gold leaf by hammering the metal between goldbeater's skins. The art probably originated among the nations of the East, where the use of gold is evident from the most remote periods.

The minimum thickness to which gold can be beaten is not known with certainty. As early as 1621 records show that from one ounce of gold was produced more than 105 square feet of leaf. As time passed, the amount of leaf from a given quantity of gold increased to as much as 300 square feet to the ounce. The malleability of gold is greatly diminished by the presence of other metals, even in minute quantity. The modern "book of gold" containing 25 leaves, each $3\frac{1}{4}$ inches square, equals an area of 264 square inches and weighs between four and five grains.

DIESEL RACING CAR BUILT BY C. L. CUMMINS AND A. S. DUSENBERG. REPORTED TO CARRY SUFFICIENT CRUDE OIL TO RUN NON-STOP AT 100 MILES AN HOUR FOR 1,200 MILES



Courtesy Science Service

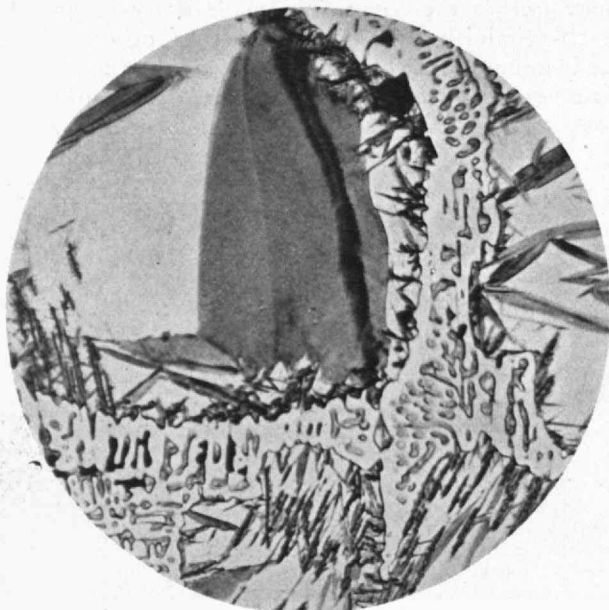


Bell Telephone Laboratories

ABOVE: STEEL MAGNIFIED 5,500 TIMES BY SUPER-MICROSCOPE DESCRIBED ADJACENTLY. BELOW: STEEL MAGNIFIED 175 TIMES



BELOW: A NEEDLE OF MARTENSITE, AN EXTREMELY HARD MATERIAL FORMED BY TEMPERING. MAGNIFIED 3,230 TIMES



Super-Microscope

SCIENTIFIC progress in many fields has largely become dependent upon progress in the design of research tools and instruments. The Review reported last month the development of a new spectroscope which will help in pushing a little further into the unexplored realms of atomic physics. The improvement of another optical instrument for research has lately been announced — a refinement of a scientific instrument which will lead inevitably to scientific progress. We refer to the super- or ultraviolet microscope designed by Dr. Francis F. Lucas of the Bell Telephone Laboratories. This new microscope employs ultraviolet and is capable of magnifications as great as 6,000 diameters — six times greater than any previous instrument.

Some 50 years ago the late Dr. Ernst Abbe, great optical authority of the Zeiss Laboratories in Germany, came to the conclusion that the wave lengths of visible light were too long to produce small details. Later, scientists of the Zeiss Laboratories constructed a microscope which utilized entirely the short invisible ultraviolet rays. For some reason the importance of this work was not realized at the time. Dr. Lucas, seeking an instrument that would reveal the smallest detail possible, turned to the idea of the Germans and designed the ultraviolet microscope which has recently been announced. Dr. Lucas is a metallurgist, and it was for studying the structure of metals that he designed this new instrument. It will have other uses, however, and is expected to open up new fields of research in biology. Under its keen eye a single cell, the smallest of living units, is expected to be revealed in minute detail.

Some conception of the great possibilities of this super-microscope is indicated by the fact that, in addition to giving magnifications as high as 6,000 diameters, it is capable of photographing on focal planes spaced as closely as 100,000th of an inch.

In its scrutiny of metals, the new microscope has already revealed very interesting conditions. (See adjacent illustrations.) The surface of a piece of steel magnified 3,500 times showed, for example, a network of fine cracks, which may indicate the cause of structural breakdowns, now called "fatigue." These infinitesimal cracks are produced by the heat treatment of the metal, and with the aid of Dr. Lucas' instrument, science may go far toward solving the mystery of why metals fail. Out of such studies are likely to come a revision of existing methods or entirely new methods of heat treatment.

The new microscope, because it employs as its light source the invisible ultraviolet, reveals what it sees, not to the human eye, but upon a photographic plate. Its most accurately ground lenses are of quartz, which transmits the ultra-violet light, the source of which must be very intense. The light in the instrument designed by Dr. Lucas is obtained by a cadmium spark.

Because the objects studied under this instrument cannot be seen by the human eye, the operation of the microscope demands a special technique. The object, for instance, is brought into approximate focus in the usual manner, and it is then viewed by means of what is called a "searcher eyepiece," a bit of fluorescent glass upon which the invisible light produces a visible image. This image is in turn brought very nearly into focus by further manipulation, which requires the most sensitive adjustment. The plate holder is then

put into place and four photographs are usually taken, each one an exposure of slightly different focus. This technique usually produces at least one photograph in which the detail is recorded in sharp outline.

Food Technology vs. Gastronomy

"Dainty sauces are the life, the nobility of famous dishes; taken alone, the former would be nauseating, the latter plebeian."

—George Meredith

FOOD technology has been and is of enormous value to man, but in desperately pursuing its fruitful ends we have shown a tendency toward ignoring some of the more artful and exalting aspects of gastronomy. In our chase after the almighty vitamin we have almost forgotten the art of combining and embellishing food. To paraphrase La Rochefoucauld, eating vitamins is a necessity, but eating intelligently is an art.

It is not an art to eat only with an eye toward maintaining the calcium content of one's bones, or toward preventing rickets, or toward acquiring the proper calory input. To eat with only these things in mind is like painting a picture wholly by the laws of physics, and excluding aesthetic considerations. The result is bound to be drab and barren, hardly inspiring even to physicists.

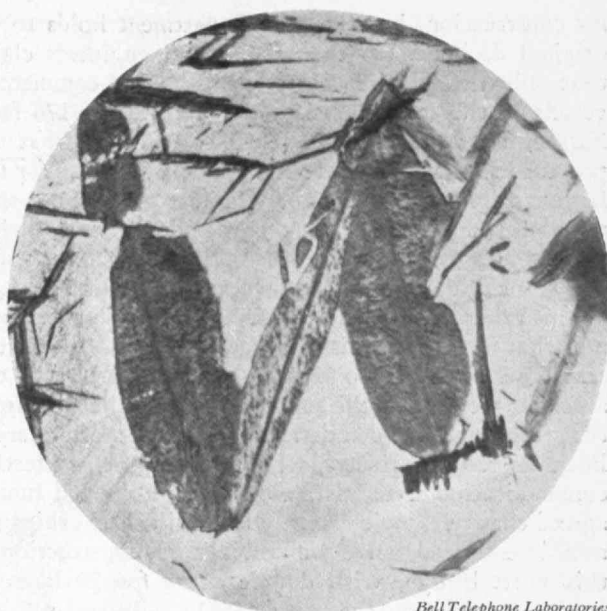
If we wish to design a great building which men will admire and approve (if only as an advertisement) we do not leave it entirely to a structural engineer; to his necessary work we add the architect to humanize the structure and make it a thing of beauty. Even our great bridges are no longer mere exercises in applied mechanics; the engineer designs them to stand up and the architect, without decreasing the factor of safety, adds his touch to make them nobly beautiful in their strength, structures not only to support man, but to stimulate and satisfy man's aesthetic hunger.

But we are in danger of being less civilized in our eating, utilizing only the mundane science of the food technologist and ignoring the art of the cook. The situation is reflected in current food advertising; there is an unappetizing insistence upon dubious scientific factors, and almost no emphasis on the cunning mixing of ingredients to give the final dish the same harmony that painters give to colors. The situation has reached the stage where the man in the street can talk glibly of vitamins and calories but college graduates know nothing of *bouillabaisse*, or the sauces Béchamel or Soubise. We must give the food technologist his due, but in so doing we must recognize that he cannot administer to the higher faculties of the palate and pylorus.

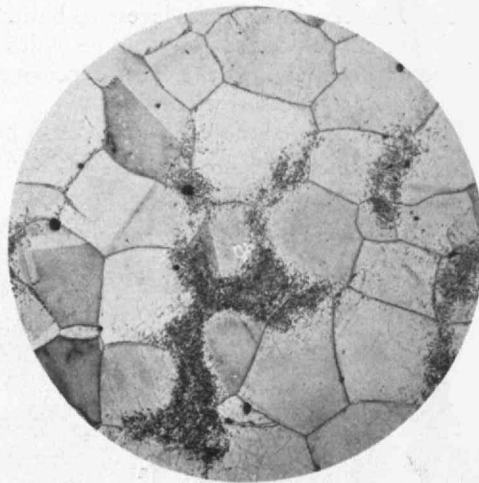
The Height of Ships' Masts

WHETHER or not a bridge is to be built across New York's teeming harbor at a cost of \$180,000,000 depends, for the moment, on a matter of a 25-foot difference in the height of a ship's mast. The proposed bridge, a single span of 3,240 feet, would connect Manhattan Island and New Jersey at 57th Street.

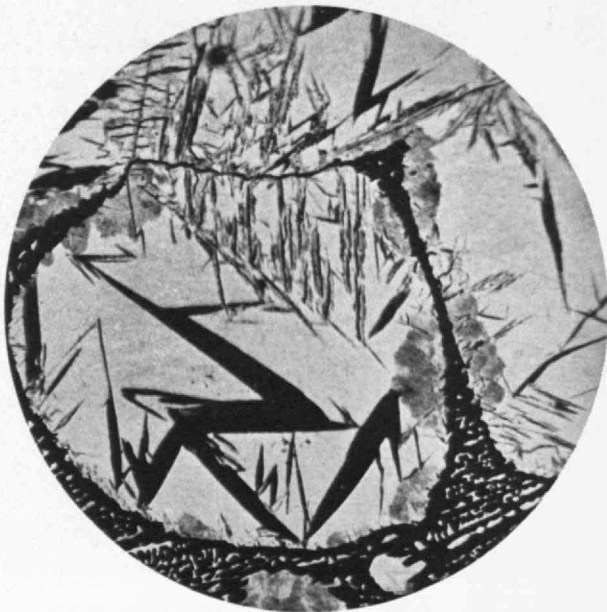
As originally designed the bridge would have a clearance of 155 feet above the Hudson River. The War Department regulations, however, arbitrarily demand a clearance of 200 feet. A second design increased the clearance to 175 feet, the 20-foot difference adding \$20,000,000 to the estimated cost



FLAKY NEEDLES OF MARTENSITE, SHOWN TO BE A PRECIPITATION OF IRON CARBIDE. BELOW: STRUCTURE OF MANGANESE STEEL



BELOW: HIGH-POWERED STUDY OF AUSTENITE CRYSTAL SURROUNDED BY A DARK MATRIX OF IRON CARBIDE



for construction, but the War Department holds to its original decision. On the other hand, engineers claim that only three United States ships and 19 commercial vessels in the world have masts higher than 175 feet. Furthermore, they direct attention to the fact that the proposed site is well above the docking facilities for the largest ships. As for naval vessels, it is pointed out that to reach the Brooklyn Navy Yard, one of the most important on the Atlantic seaboard, vessels must pass under Brooklyn Bridge, which has a clearance of only 133 feet.

This raises the interesting question: Why ships' masts? now that steam has banished large sailing vessels from the seas. The answer is, to support radio masts to hold the antennae well above the smoke and fumes that roll from the great funnels, and as derrick masts for handling cargo. But even radio engineers, while claiming more effective communication if aerials are clear of smoke and fumes, agreed that telescopic masts, with which some ships are already equipped, solve the problem. So, construction of this great bridge, with double decks for 20 lanes of vehicular traffic on the top deck, 12 railway lines and moving sidewalks for pedestrians on the lower level, depends on whether the War Department will reduce its clearance to 175 feet above water level. To build a bridge to fit their present requirements would necessitate extension of the approaches into the most expensive section of Manhattan at a prohibitive cost.

The *Majestic*, queen of the White Star fleet, has masts 221 feet high; the *Berengaria* 215½ feet; the *Bremen*,

Europa, *Olympic*, and *Leviathan* all rise to a height of more than 200 feet. The liners *California*, *Pennsylvania*, and *Virginia* have telescopic masts that can be lowered to 128 feet. As for naval vessels, the only ships halted by a 175-foot clearance would be the *Omaha*, *Lexington*, and *Saratoga*, the first with masts 193 feet high, and the other two 185 feet above the water-line.

The Bridge-Builders

AN index of American engineering genius can be found in the multiplicity of bridges that knit together our country. From rude structures arching puny brooks to colossal suspensions thrown across broad rivers and bays, they collectively represent a boldness and ingenuity incomparable in the history of bridge building. Symbols, they are, too, of American unity, democracy, homogeneity. The American continent, reticulated with streams, crenulated with bays, a patchwork of land, is being stitched together, physically, politically, and socially by these many structures.

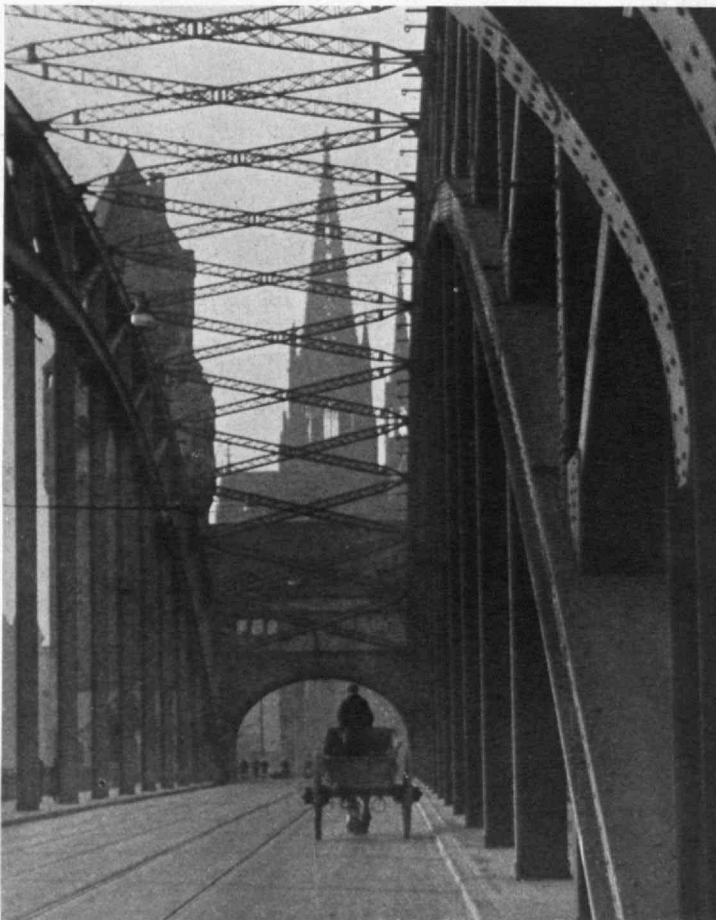
A glance over the record for the past few years yields convincing evidence, while present projects and future plans clinch the point. The Ambassador Bridge with its 1,850-foot suspension between Detroit and Windsor, Canada, is in use. The Kill van Kull, with its steel arch of 1,652 feet, the longest in the world, connecting New Jersey and Staten Island, is to be opened for traffic by the end of this year. So is the stupendous Fort Lee-Hudson

River Bridge, nearly twice as long as the Ambassador. Construction is to start this spring on an even longer suspension bridge — a span over the Golden Gate 4,200 feet long — and the location has been selected for another great structure nearby, the San Francisco Bay Bridge to Oakland, to cost \$12,000,000. The Martinez-Benicia Bridge of the Southern Pacific Railway across Suisun Bay, costing a like amount and made notable by its heavy earthquake-proof design, was opened November 1. Other bridges recently completed include:

1. South Shore at Montreal. Contains 1,097-foot cantilever in its two miles of length.
2. Columbia-Wrightsville over the Susquehanna. Twenty-eight arches, longest of its type.
3. Mid-Hudson at Poughkeepsie. Suspension 1,495 feet long.
4. At Vicksburg, a combined railway and highway bridge with cantilever span of 825 feet.
5. A continuous truss of two 628-foot spans over the Mississippi at Quincy, Ill.

In addition the following have been started or are being planned.

1. Four structures at Pittsburgh: the Tenth Street suspension, the McKees Rocks and West End Steel arches, and the George Westinghouse concrete arch. The last of these, with a main span of 460 feet, outdistances anything of its type.
2. Triborough over Hell Gate.
3. Waldo-Hancock, high-level 800-foot span suspension over the Penobscot River.
4. Belt Railway and the Hero-Hackett at New Orleans.
5. The 750-foot suspension at Toledo, Ohio.



Wolf: Courtesy The Seven Seas

BRIDGE OVER RHINE RIVER AT COLOGNE

6. Two concrete arches over the Niagara at Tonawanda, N. Y.

7. Cantilever crossing of the Hudson at Catskill, N. Y.

8. The Arlington Memorial Bridge over the Potomac with double-leaf bascule span.

9. St. Johns over Willamette River at Portland, Ore., with a record-breaking span of 1,207 feet for rope strand type of cables.

Public vs. Private Financing of Bridges

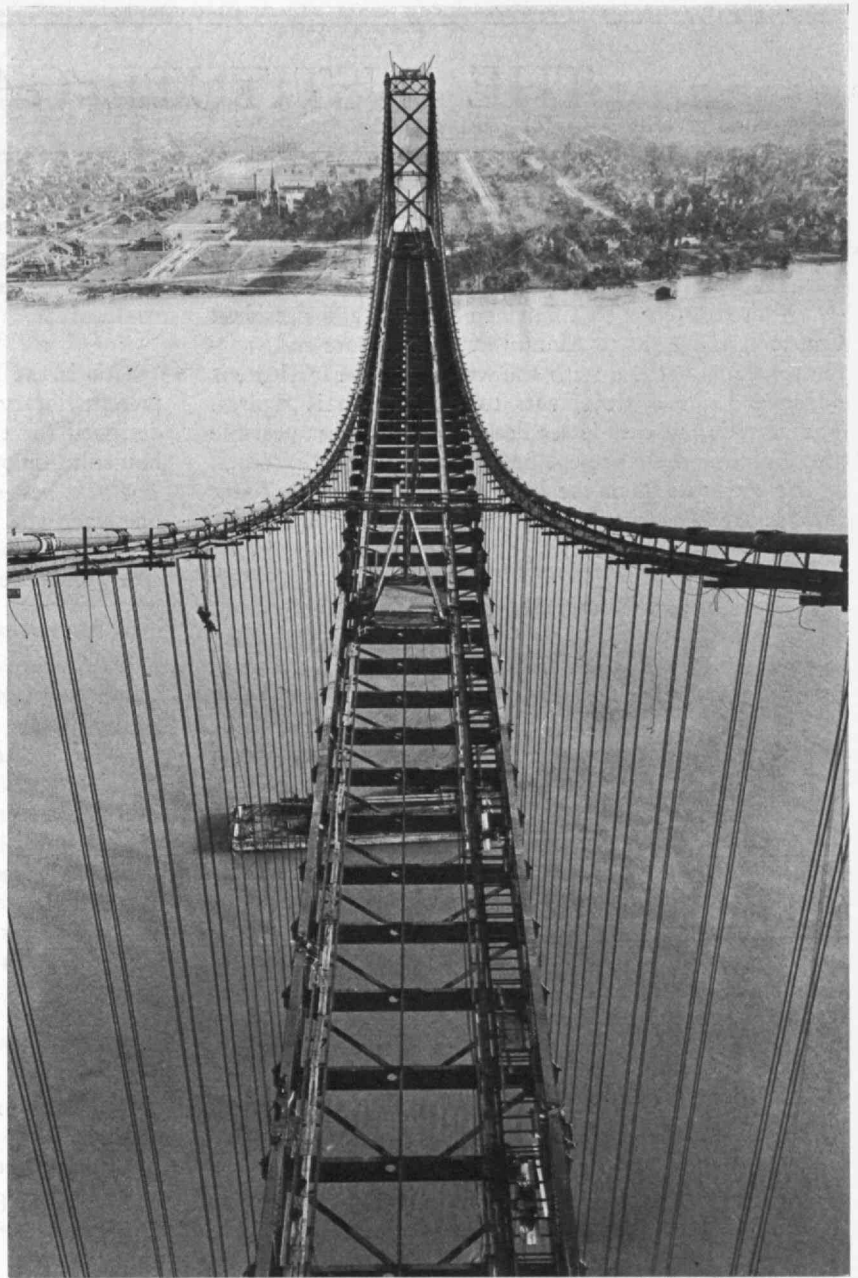
INCREASES in the number of highway toll bridges in this country in the last few years have been so rapid that up to last summer nearly 300 were in operation and some 50 more will soon be added. These will bring the country's total investment in such structures to well above a billion dollars, a sum exceeding the present combined wealths of Delaware and Nevada, and almost equal to the entire pre-War national debt of the United States.

Toll bridges privately operated are now the predominating type but this bids fair to be a passing situation. Though individual enterprise has erected toll bridges since Colonial times and one such venture (displacing a ferry across the Susquehanna at Harrisburg) has been maintained continuously since 1817, private toll bridge construction in its modern phase may be considered a thing of the past ten years, like radio broadcasting or aerial surveying. With the opening of the Bear Mountain Bridge in 1923, built and operated by private capital under a State charter containing a recapture clause, the boom was on. Following it, private toll bridge construction rose until 1927 when 24 were built, but then came a decline and at present no new projects are under way.

At first the privately financed ventures proved out because their entrepreneurs went slowly and investigated carefully, basing their estimates on traffic surveys of the early 1920's. In a way, these earlier bridges experienced the sort of phenomenal traffic growth which made the railroads so prosperous from 1900 to 1910.

Unfortunately, later bridge proposals were evolved with less care and, being without adequate legal guarantees against the competition of ferries, vehicular tunnels, and parallel free bridges, have often experienced difficulties in making ends meet. Then too, motorists kicked against paying tolls which they believed were purposely scaled high to yield a profit to private investors.

The unsatisfactory earning power of many privately operated toll bridges and the recognized wariness of capital when faced with the uncertainty of legislative



Courtesy McClintic-Marshall Company

A STUDY IN SCALE — AND IN CURVES. BUILDING THE AMBASSADOR BRIDGE AT DETROIT

franchises, have thus caused the publicly-owned type of toll bridges to become more common.

Hence the "revenue bond" method, hitherto often used for financing other public works, came to the front for the bridges. By this system toll revenues are pledged to pay interest and sinking fund on mortgage bonds which, because of their quasi-municipal character, benefit from a low interest rate. At this writing it seems to be the ultimate solution for most super highway bridge construction and it drives the private-financing method farther into the discard. Under its provisions the bonds are income-tax free in most instances and also are not subject to local taxation. Besides, the bridge itself is tax free, it is operated without profit, and the public constantly can measure definite progress toward the time when the mortgage indebtedness will be entirely redeemed and the bridge made free of toll.



A Letter to Alumni of the M. I. T.

AT THE Annual Dinner of the Alumni Association held on February 28 (see page 343) there was distributed a letter by Chairman Stratton and President Compton addressed to Alumni of the Institute and written to acquaint them with the work that the Institute is doing and the achievements toward which it aspires. The material in this letter deserves the widest possible circulation and we present herewith important excerpts.

The major needs of the Institute as listed in the letter include the following:

1. Distinguished Professorships

In order to secure outstanding men of the country and to stimulate younger men to work toward a distinguished career in the Institute, it is desirable to establish a small number of "distinguished professorships," open only to men of world-wide distinction and carrying salaries at least equal to those of the best professorships existing elsewhere.

2. Endowment of Fundamental Sciences

In order to strengthen the work of the Institute at its core, and to maintain its prestige as the leading center of applied science, it is essential that additional funds be secured to support research work in the fundamental sciences. Deserving of particular mention are physics, chemistry, geology (particularly geophysics), biology (particularly biophysics, biochemistry, bacteriology).

3. Walker Memorial Extension

Extension of Walker Memorial is extremely desirable to make more adequate provision for student and faculty activities and social life.

4. Faculty Club

A Faculty Club would do wonders for the *esprit de corps* of the staff, and experience with such clubs elsewhere shows that it would add to the effectiveness of their work.

5. Building for Industrial Research

A suitable building devoted to the activities of the Division of Industrial Cooperation and Research and operated somewhat along the lines of the Mellon Institute of Pittsburgh would be of great benefit to New England industries, would provide an additional training ground for our graduates, and would be nearly and perhaps more than self-supporting. It should, however, be conducted to supplement rather than to compete with such private organizations as exist to do similar work.

6. Fellowships

A certain number of good fellowships in the Graduate School, with stipends of \$1,000 to \$1,500, would go far to provide at the Institute a nucleus of the best graduate

student talent of the country. Experience in other institutions has shown that this is a most successful way of building up a good graduate school and of promoting the advancement of knowledge.

7. The Library

This is the heart of any educational institution. The present library quarters are inadequate, not having been designed for the purpose and being overcrowded. The best solution of this problem would be a library building. The next best solution would be more adequate funds for operating the present library in the most effective way. A subsidiary need is a series of funds for support of relatively small departmental working libraries.

8. Museum and Society of Arts Lectures

The Society of Arts lectures, given primarily for young people of high school age in greater Boston, have been a tremendous success and even their repetition two or three times often falls far short of meeting the demand for seats. This shows that an extremely valuable contribution of the Institute to scientific education could be made by the establishment of a museum of science and industry, as was contemplated in the original charter of the Institute and planned for in the present quarters of the library. Such museums are meeting with great success in other large centers, such as New York, Chicago, Philadelphia, Detroit.

9. Field House

The present field house under the bleachers in the athletic field is inadequate. A better structure is urgently needed.

A fine athletic house and field house could be located on the vacant property of the Institute west of Massachusetts Avenue, at relatively small expense.

10. High-Pressure Laboratory

Important research work at high pressures is being done by the Department of Chemical Engineering in a small wooden shed to the rear of the main buildings. In conformity with the plan for the development of the Institute a high-pressure laboratory should be erected adjacent to the cryogenic laboratory.

11. Endowment and Unrestricted Funds

Except in so far as donors like to make their contributions for specific objectives in which they are personally interested, it is recognized that contributions in the form of unrestricted funds constitute the most desirable form of gift, since such a gift is always available for use in the direction of greatest need.

IN SPEAKING of the immediate future, Drs. Stratton and Compton discussed the cost of instruction and the proper remuneration of members of the Institute's staff. "Since the time of the Civil War," they wrote, "the

Corporation Nominees

NINE men each year are chosen by the Nominating Committee and presented to the constituency of the Alumni Association for it in turn to select three from the nine as candidates for Term Membership on the Corporation, legal governing body of the Institute. This year, because of the death of William E. Nickerson, '76, it is necessary to select an additional alumnus to fill Mr. Nickerson's unexpired term. The Nominating Committee, therefore, presents twelve names instead of the customary nine, and from these twelve selections of the Nominating Committee, the Alumni Association is to select four.

This group of twelve from which the four Corporation Nominees who will take office for five years, beginning July 1, will be chosen is composed of the following:

Left, from top to bottom

WILLIAM S. FORBES, '93

President and Treasurer, The Forbes Lithograph Mfg. Company
Boston

HENRY E. WORCESTER, '97

Vice-President, United Fruit Company
Boston

CYRUS Y. FERRIS, '04

Vice-President and Director, Stone and Webster and Blodget, Inc.
Boston

OSCAR G. THURLOW, '04

Vice-President of Allied Engineers, Inc.
Birmingham, Alabama

FRANCIS J. CHESTERMAN, '05

Vice-President and General Manager, The Bell Telephone Company
of Pennsylvania
Pittsburgh, Pa.

SIDNEY T. STRICKLAND, '05

Partner, Strickland, Blodget and Law, Architects
Boston

Right, from top to bottom

EDWARD L. MORELAND, '07

Partner, Jackson and Moreland
Boston

THOMAS C. DESMOND, '09

New York State Senator
Newburgh, N. Y.

EMMONS J. WHITCOMB, '11

Vice-President, Raymond and Whitcomb Company
Boston

ARTHUR C. DORRANCE, '14

President, Campbell Soup Company
Camden, N. J.

MARSHALL B. DALTON, '15

Vice-President, Liberty Mutual Insurance Company
Boston

FRANCIS V. DU PONT, '17

President Equitable Office Building
Wilmington, Del.

To select the alumnus to fill the vacancy occasioned by the death of Mr. Nickerson the following three names of the above group are presented separately in the ballot: William S. Forbes, '93; Oscar G. Thurlow, '04; Emmons J. Whitcomb, '11. Out of this group of three, one is selected; out of the remaining nine, three are selected.

Photographs of Messrs. du Pont, Moreland, Dalton, Ferris, Strickland, Forbes, Dorrance, Whitcomb, Chesterman, and Thurlow; by Bachrach, Blank and Stoller, Inc., Garo, Phillips Studio, Underwood and Underwood, Trinity Court Studio, and DeLuxe Studio, respectively.

tuition has been increased four times, and next fall will be the fifth increase, when the tuition is raised from \$400 to \$500 per year. At this figure the tuition will take care of approximately half of the total cost of instruction. Another way of stating it is that it will take care of approximately the salaries of the instructing staff. It is reasonable that in a professional school the tuition should more nearly pay for the cost of instruction than in a school of the liberal arts type, and yet the present tuition is considerably less than that which is in operation in a number of the leading liberal arts colleges. Consequently there can be little criticism of the increase which is to go into effect next year, particularly since the liberal plan of scholarships and especially the great new loan fund provide that no worthy and promising young man needs forego the advantages of a scientific or technical education at this Institute because of lack of financial resources.

"The cost of instruction has various interesting aspects. Of course no one could defend extravagance in the running of an educational institution. On the other hand, no true believer in the Institute would wish its instruction to be of the type called 'cheap instruction.'

"In this connection consider the following comparison: the average salary of a full professor at the Institute was last year \$5,080. At three sister institutions the salaries of full professors ranged respectively from \$8,000 to \$12,000, from \$7,500 to \$12,000 and from \$8,000 to \$14,000. Our associate professors last year received an average salary of \$4,040, whereas in three sister institutions the salaries for this grade are minimum \$6,000, maximum \$7,000; minimum \$5,000, maximum \$6,000; minimum \$5,500, maximum \$6,000. Our assistant professors receive on the average a salary of \$3,130, whereas in three sister institutions the corresponding salary ranges are minimum \$4,000, maximum \$5,500; minimum \$3,600, maximum \$5,000; minimum \$3,500, maximum \$5,000. Our instructors' salaries do not differ markedly from those in sister institutions of the first grade.

"These comparisons point to a very serious situation. They show that, particularly in the higher grades, the members of our staff are receiving salaries very inferior to those in other first class institutions, and this in spite of the fact that the competition for the services of first class men is much keener in an engineering or other professional school than in a liberal arts college, because of the competition with industrial concerns. This situation has led to three types of results: first, the Institute has lost some of its most valuable men; second, other men have remained at the Institute at a great financial sacrifice because of loyalty to it; third, a large majority of the men on the staff have been forced to supplement their Institute salaries by income derived from services rendered to outside agencies.

"The latter situation has created what is probably the most serious internal problem in the Institute. On the one hand, consulting work and engineering practice of a high grade are certainly valuable and possibly essential to the successful work of a man engaged in this profession, and certainly such work must be continued. On the other hand, it has been a serious detriment to have a situation which has forced numerous men to engage in a type of outside consulting work which does not contrib-

ute to the advancement of the profession or to the development of the individual engaged in it, but is simply undertaken because it is the means in sight for enabling the man properly to support his family. Furthermore this practice has led to great inequality in total income to the men engaged in various types of work, very much to the detriment of those who have chosen lines of work which may be of the greatest importance to science and engineering but which do not happen to have a monetary reward at the present time.

"In order to alleviate this situation, the Executive Committee has taken advantage of the increased income which is expected from the new tuition next year, to institute a new plan of faculty appointments as follows:

"Promotions and new appointments for the coming year will be at a substantially larger salary than hitherto, but will be subject to the condition that the man who accepts such an appointment will agree promptly to pay over to the Bursar 50% of income received for services to parties outside the Institute. The funds thus paid in to the Bursar shall constitute what will be known as a 'professors' fund' which will again be distributed as salaries among those who have been appointed on this new plan. In order not to work an injustice among those members of the present staff who have taken their position with definite understanding of opportunities for supplementing their salaries by outside work, or who have done this by common practice, any member of the present staff who is recommended for an increase in salary, will have the option of refusing this increase but remaining on the old plan with its privileges.

"In its essential features this plan is not new. Obviously this same type of problem has been a serious one for many years in many institutions. This new plan is quite similar to that which has been adopted in some foreign universities, for example, the University of Glasgow, and which is also in force in several institutions in this country. One institution in America, namely Chicago, has gone much farther than this in its professional schools of law and medicine in that appointees are required to turn back all fees received for outside services.

"The fundamental issue involved is really the definition of what is implied in the term of appointment to a full-time position on the staff of the Institute. There have been those who interpreted the terms of appointment as meaning merely the attendance to the scheduled class appointments, leaving the balance of time free for any outside activity, professional or otherwise. Against this it is maintained that the standard professor's schedule in vogue in all first class educational institutions is made as small as it is in hours per week with the expectation that the man shall devote the balance of his time to scholarly or professional pursuits for his own development and to the advantage of the institution. Consequently it is maintained that a full-time position at the Institute implies actually that the full-time professional services of the appointee are for the service of the Institute in any or all of its various activities, such as teaching, research, administration, or coöperation with business and with industry.

"The new plan is expected to result in greater freedom on the part of the professor in choosing his line of productive activity, and also a more equitable distribution

among the staff of the financial return from their services to the Institute. Since no plan can probably be devised which will be satisfactory for all cases, it is possible that some special appointments, as special lecturers or otherwise, may have to be made to supplement the ordinary type of new appointment."

OTHER interesting items in the letter included the statement that a simplification of schedule is being worked out by the Faculty whereby numerous courses which differ from each other in very minor particulars are grouped into one common course leading thus to less confusion in the schedule and in the long run to greater economy and effectiveness in conducting the work.

Limitation of enrollment, states the letter, seems to be a necessity since the educational plant is now being used almost to capacity and further increase in applications for admission will make it necessary for us to exercise some sort of selection in addition to the ordinary requirements for admission.

The letter also included a list of gifts and legacies received during the past year. Exclusive of the Loan Fund they total \$703,199.96. The Loan Fund to which 18 men contributed will amount to \$4,210,000 at the end of ten years.

Annual Alumni Dinner

ON FEBRUARY 28, at the Hotel Statler, the Association held its Annual Dinner. The occasion was marked this year by the presence of lady guests, and by the showing of an exhibit prepared by the Institute and graphically revealing many phases of Institute life.

Thomas C. Desmond, '09, President of the Association, presided at the dinner which was preceded by a reception held by Dr. and Mrs. Compton and Dr. Stratton. For 45 minutes before the dinner the guests had an opportunity to meet the Institute's Chairman and President as well as officials of the Alumni Association and the speakers of the evening. The dinner began at seven o'clock and was interspersed with dances between courses, a space having been provided for dancing in the center of the ballroom.

Professor Emeritus Robert H. Richards, '68, oldest living graduate of Technology, recounted to the guests some of his experiences in the early days of the Institute. He was followed by Professor Dugald C. Jackson, Head of the Department of Electrical Engineering, who spoke on engineering education. Professor Edward F. Miller, '86, Head of the Department of Mechanical Engineering, related a number of amusing episodes of student pranks in the old days.

A series of colorful and significant scientific experiments were conducted during the dinner by Dr. Thomas J. Killian, '25, of the Department of Physics, assisted by Mr. Shinji Togo of Tokyo, Japan, a graduate student in Electrical Engineering, and Mr. Harold Edgerton of the Department of Electrical Engineering. An artificial aurora borealis was produced in miniature by electrical discharges in rare gases. In a long glass tube devoid of air, electrical discharges through varying quantities of nitrogen, neon, helium, carbon dioxide, and argon gas produced flashes of red, blue, yellow, orange, green, and

amber light. The blending and movement of the colors in the tube simulated the natural spectacular phenomenon of the aurora borealis.

This demonstration, the result of many years of study in electric discharges in various gases, provides a means for studying the constitution of gases, and the structure of the atoms and molecules in the gas. Cold light was produced in another experiment when Dr. Killian held a bulb containing argon and another containing iodine in a high frequency electrical field. In the first instance a brilliant white light occurred, and in the second, a vivid purple. A "snake dance" of color lighted up the entire ballroom in the final experiment of the evening, when a large current in a long tube illuminated the gases it contained.

Chairman Stratton spoke briefly of Institute affairs and of the advantages of the new administrative organization. President Compton closed the dinner formalities with a brief summary of Institute activities and problems. He stated that the greatest possible amount of revenue accruing from next year's raise in tuition from \$400 to \$500 will go toward raising faculty salaries to a figure more nearly approximating those offered by similar institutions. He also spoke of a number of important investigations and experimental researches now being carried on in the Institute in the interests of general engineering practice.

The program which was completed shortly after ten o'clock was followed by dancing and most of the 500 Alumni and guests attending the dinner remained either to dance or to talk. In many respects the evening constituted one of the most successful events that the Association has ever sponsored. Great credit redounds not only to the Committee on Assemblies, but to Mr. Desmond and his assisting officials of the Alumni Association and to the official Institute which contributed so freely and heartily toward making the dinner a success. Bursar Horace S. Ford who supervised the Institute exhibit did an admirable job. The decorative screens were executed by the Department of Architecture under the direction of Professor Harry W. Gardner, '94.

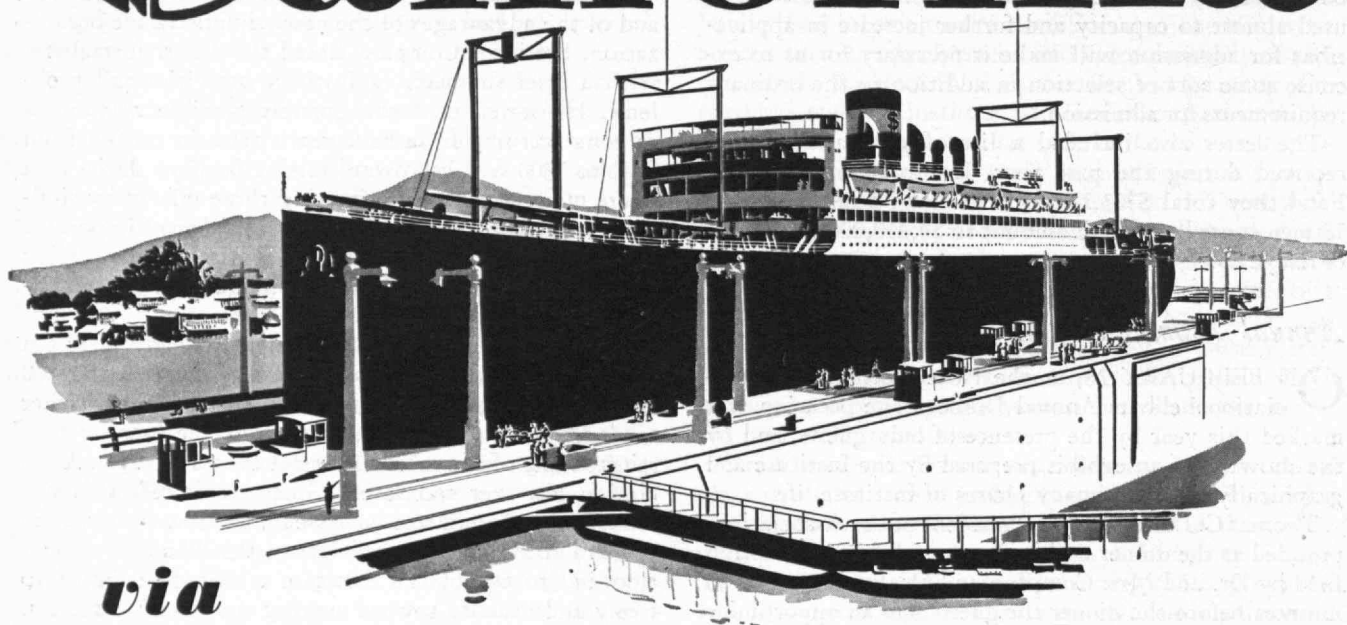
Alumni Council — Dormitory Dinner

IT IS indeed a season of mixed parties, as Mr. Desmond has so frequently pointed out. On February 13 members of the Alumni Council accompanied by lady guests met with students resident in Technology dormitories and their lady guests to celebrate the renaming of the dormitories. The dormitories in the new quadrangle behind Walker Memorial had for some time been laboring under the uninspiring designation of letters and numerals.

This combined meeting of Alumni and students was presided over by Harold P. Champlain, President of the Class of 1931 and Chairman of the Institute Committee. Mr. Champlain, as spokesman for the undergraduates, expressed the appreciation of the student body for the excellent dormitories made possible through Alumni aid.

President Karl T. Compton and Dr. Samuel C. Prescott, '94, Head of the Department of Biology and Public Health, were the principal speakers of the evening. Dr. Compton recalled his experiences as an (*Concluded on page 358*)

WORLD LINERS TO California



via

Havana and the Panama Canal

Famous President Liners on their way Round the World offer you a unique service—New York to Los Angeles and San Francisco.

Only Dollar Line offers these advantages:

1. The cosmopolitan, hospitable atmosphere natural to great ships that know the world.
2. A stopover in Havana that is 6 hours longer than any other service.
3. All outside staterooms, with twin beds.
4. Fortnightly service until May 7, then *every week* from New York.

5. Free Parlor Car Motor Coach Service from the Hotel McAlpin to the liner.

Low Fares to the Orient

Excursion fares lowest in years, in effect on President Liners sailing from Pacific Coast between April 1 and July 31; return limit October 31.

Include HONOLULU at no extra cost, if you like.

YOKOHAMA and back	\$450
KOBE and back	\$465
SHANGHAI and back	\$520
HONGKONG, MANILA and back	\$565

President Liners sail every week from Los Angeles and San Francisco to the Orient and Round the World. Fortnightly from Seattle and Victoria to the Orient and Round the World. Every week a President Liner returns to America. Stop over as you please. See your local agent or write the offices below.

Havana All-Expense Tour—11 days—\$150.

DOLLAR STEAMSHIP LINES AMERICAN MAIL LINE

24 PROVIDENCE STREET BOSTON
604 FIFTH AVENUE NEW YORK

210 SO. 16TH STREET . . PHILADELPHIA
1005 CONNECTICUT, N. W. . WASH., D. C.

CUNARD
WHITE STAR
French Line
HAMBURG AMERICA
Lloyd Sabaudo
Atlantic Transport
MAN LLOYD
Scandinavian
UNITED STATES
WARD LINE
ALLAND AMERICA
Cosulich
ANCHOR
DOLLAR
BERMUDA
UNITED FR
BLUE FUN
Munson Ste

All in One Office

▲ No matter what steamship or line you travel by . . . you can get your tickets in any Raymond-Whitcomb office . . . at the steamship company's own published rates.

Raymond-Whitcomb are authorized agents for all the leading steamship lines. Every office is headquarters for steamship information. There you can compare sailing schedules, rates, and ship plans of various lines; secure expert and unprejudiced advice regarding ships and routes; purchase your tickets, and obtain help with your passport and in securing the necessary visas.

Raymond-Whitcomb will also make hotel reservations in cities you will visit . . . or arrange your entire trip.

◀ Whether you travel for business or for pleasure you will save time and effort by getting your steamship tickets from Raymond-Whitcomb ▶

NORTH CAPE - RUSSIA CRUISE

To sail on June 30 on the S. S. "Carinthia"

A five weeks' voyage to the lands of the Midnight Sun . . . ending in France or England, as you prefer, in time for summer travel in western Europe. The cruise ticket — \$800 and upward — includes return passage to America at any time.

For ten years the Raymond-Whitcomb North Cape Cruise has been the favorite summer cruise. It will be more complete this year than ever before. There will be two days in *Leningrad*, the capital of the Czars; two more in *Moscow*, the present Russian capital . . . all without extra charge . . . visits to *Danzig* and interesting places in *Iceland*, *Norway*, *Sweden*, and *Denmark*.

Send today for the North Cape Booklet

• EUROPE •

Tours with escort . . . arranged on different standards to meet different purses. Cabin series, \$950 and upward. De luxe series, \$2145 to \$2860. And an intermediate series, \$1390 to \$1730. All these tours . . . in their respective classes . . . are superior tours . . . comprehensive, comfortable, or even frankly luxurious.

Individual trips, planned to meet individual requirements in date, route, and other respects . . . and arranged for travelers.

Land Cruises and Tours in America

visiting Mexico, California, Alaska, the National Parks and the Canadian Rockies

RAYMOND-WHITCOMB COMPANY

*Executive Offices: 126 Newbury Street, Boston, Massachusetts
New York, 670 FIFTH AVE.; New York, 225 FIFTH AVE.; Boston, 165 TREMONT STREET;
Philadelphia, 1601 WALNUT STREET; Chicago, 176 NORTH MICHIGAN AVE.; Detroit, 421 BOOK BLDG.; Los Angeles, 423 W. FIFTH STREET; San Francisco, 230 POST STREET
and 300 agents in 219 cities, or any authorized steamship agent*

P&O
RED
N.Y.K.
South
Matso
Orien.
GRAC
ican
N.G.I.
PORTC
ALASI
nion
K-P-M
MAI
urnes
Ley
C.P.R.
Danis
Pov.



Europe at a Bargain Sail on Your OFFICIAL ALUMNI FLEET

A great year to travel abroad . . . 1931. Hotel rooms, food, clothing, transportation and entertainment at prices lower than any in recent years. Travel bargains start at your own United States Lines piers! Fares and room reductions clip travel costs at the start. LEVIATHAN, largest and most famous ship in the transatlantic lanes, offers amazing values in First Class. Even to suppers and entertainment *without cover charge or check* in the brilliant Club Leviathan, Ben

Bernie dance orchestra. Pompeian swimming pool, gymnasium, electric baths. All deck games.



Famous cabin ships . . . GEORGE WASHINGTON, AMERICA, REPUBLIC, PRESIDENT HARDING, and PRESIDENT ROOSEVELT . . . also offer the full length of refinement at exceptionally low fares. Tempting Tourist Third Cabin values and the famous new Leviathan Tourist "Grade A." For new fares, deckplans, itineraries, etc., write your alumni secretary, your local agent or

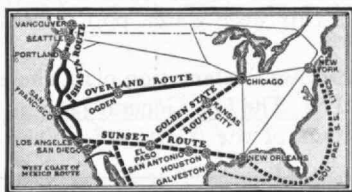
UNITED STATES LINES

OFFICIAL FLEET OF THE INTERCOLLEGIATE ALUMNI ASSOCIATIONS

New York, 45 Broadway; Atlanta, 714 Healy Bldg.; Boston, 75 State Street; Chicago, 216 N. Michigan Avenue; Cleveland, Hotel Cleveland Bldg.; Detroit, 1255 Washington Boulevard; St. Louis, Jefferson Hotel; Philadelphia, 1620 Walnut Street; San Francisco, 691 Market Street; Los Angeles, 756 South Broadway; Minneapolis, 312 Second Avenue South; Seattle, 1337 Fourth Avenue; Pittsburgh, 434 Oliver Avenue; Washington, 1027 Connecticut Avenue; Little Rock, Wallace Bldg.; New Orleans, Hibernia Bank Bldg.; Berlin, Unter den Linden 9; Hamburg, cor. Alsterthor and Ferdinandstrasse; London, 14 Regent Street, S. W. 1.; Paris, 10 Rue Auber. THESE LINES OFFER A COMPLETE FREIGHT SERVICE—SPECIFY AMERICAN SHIPS FOR YOUR FOREIGN TRADE.



On your California roundtrip ticket - Lake Tahoe-San Francisco Del Monte-Los Angeles-Yosemite!



By going one way Overland, returning Shasta Route you can include every place pictured, and many more

IN PLANNING YOUR TRIP remember this: The Southern Pacific Railroad was built to serve the West. As a pioneer it knows the West. On its smooth rails you break through the mountained gateways that guard California. On its rails you see more of the Pacific Coast than on any other railroad. You can name a half a hundred places on the Pacific Coast you want to see and you'll find a Southern Pacific roundtrip to include them.



SANTA BARBARA

Sacramento to the Bay of San Francisco.

To the north and the south sparkle other famous places that you want to see. If your ticket is a Southern Pacific ticket, it will carry you to Del Monte—more than 100 miles

the ruts the covered wagons left is laid its steel. Past historic Donner Lake, close to Lake Tahoe it climbs high to pierce the Sierra barrier. Then down into California. Through the American River Canyon, the Gold Country of '49, through

along the Pacific's surf line—Santa Barbara, Hollywood, Los Angeles, San Diego. Return northward through Sequoia National Park, Yosemite, and the Evergreen Playground of the Northwest. Or from Los Angeles strike back direct to Chicago via the GOLDEN STATE ROUTE. Or swing through the historic Southwest and the Old South to New Orleans. Check on the coupon below the names of the places you want to see on your trip to California. Mail it to the nearest office and Southern Pacific will furnish you complete itinerary, including costs, etc.

Low summer fares West are in effect May 15.

Southern Pacific

4 GREAT ROUTES FOR TRANSCONTINENTAL TRAVEL



DEL MONTE



SAN FRANCISCO



RED WOODS



MT. SHASTA



CRATER LAKE



PORTLAND

O. P. BARTLETT, 310 So. Michigan Blvd., Chicago, or H. H. GRAY, 531 Fifth Ave., New York.

My Pacific Coast destination will be _____ Please send me an itinerary that will include the places I have checked: ☐ Great Salt Lake ☐ Lake Tahoe ☐ Yosemite ☐ The Big Trees ☐ Crater Lake ☐ Pacific Northwest ☐ San Francisco ☐ Los Angeles ☐ San Diego ☐ West Coast of Mexico ☐ Santa Barbara ☐ Del Monte ☐ San Antonio ☐ El Paso ☐ New Orleans

Name _____

Address _____

NIAGARA'S WAYWARD YOUTH

(Continued from page 326)

We know that business and æsthetic forces have been contending since water power development began; the first group for utilization of more of the water, and the second for the complete preservation of the scenic values. Failing to secure rights to a greater flow for power uses by direct appropriation, there has been suggested by the business group a compromise plan that would redistribute the water in the river above the Falls so that an ample supply for maintenance of the cataract spectacle would be assured and the surplus, not really needed for scenic purposes, might be taken out for use on the turbines.

As I write here in Washington, the news comes down from Capitol Hill that the Foreign Relations Committee of the Senate has, after two years of consideration, rejected the proposed treaty with Canada that contained some such plan as part of its text. It is the opinion of the Senators that the power interests would profit too much from the additional flow thus obtained and that the United States should do its own engineering in protecting the Falls, while the proposed treaty provided that the work should be done by the power companies who would divide the saved water between them.

So the play goes on. As Professor Shaler has said, the water that goes through the turbines will not cut back the Falls. It may be assumed that more and more water will be used for generating electric energy if it can be diverted and yet maintain the great spectacle in all its magnificence. And, finally, "if it seems worth while,"

the Niagara limestone may be supported by an underpinning of masonry and the Falls "nailed down" just where they are wanted.

A CITY OF TOMORROW

(Continued from page 331)

side issues of the New York developments, and no deep-water channels or docks are provided, it will involve the extension of the much-discussed lighterage system, already a bone of contention which has held back the development of New York for years. Certainly, if ocean-borne raw materials are to be lightered to reach the proposed industrial center in the meadows, there can never be a metropolis of any size. One has only to look up the tonnage of Port Newark or Elizabeth to realize that.

It is certain that the United States Government will undertake the necessary dredging eventually to bring into this meadow region vessels of deep draught, but no dredging will be executed if it is not needed. The deep-water port is the essential feature of the whole scheme. Congress has just appropriated a substantial sum to continue the work in Newark Bay, but probably will not continue to do so if this deep-water port is dropped from the plan.

The New Jersey Meadows Reclamation plan, therefore, begins with Newark Bay. The late General Jadwin, who was the chief consultant of the (Continued on page 350)

ESTABLISHED 1818

Brooks Brothers,
CLOTHING,
Gentlemen's Furnishing Goods,

MADISON AVENUE COR. FORTY-FOURTH STREET
NEW YORK

Spring Clothes for Every
Occasion

Hats, Shoes, etc.

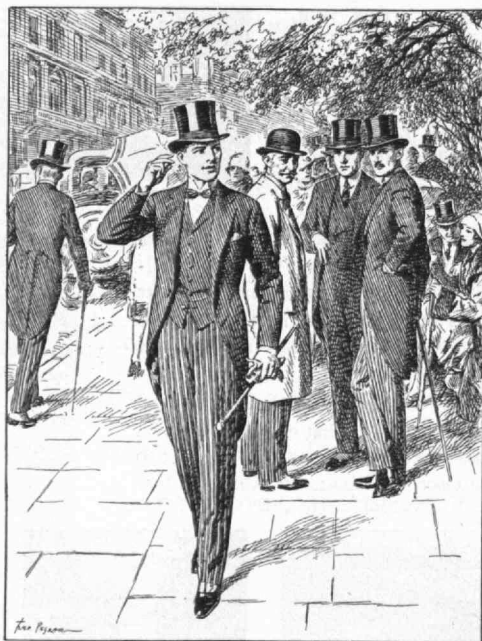
BRANCH STORES

BOSTON

NEWBURY CORNER OF BERKELEY STREET

NEWPORT

PALM BEACH



© BROOKS BROTHERS

LOCAL TELEPHONE SERVICE ONCE COST

\$ 240 A YEAR



In 1879, the New York telephone directory was a card listing 252 names. There were no telephone numbers, nor any need for them. When you telephoned, you gave the operator the name of the person you wanted. Service was slow, inadequate and limited principally to people of wealth. The cost of a single telephone was as high as \$240 a year.

Today, you can talk to any one of hundreds of thousands of telephone users for a fraction of what it then cost for connection with less than three hundred. Every new installation increases the scope and value of the telephones in your home or office.

Twenty-four hours of every day, the telephone stands ready to serve you in the ordinary affairs of life and in emergencies. In the dead of night, it will summon a physician to the bedside of a sick

child. Men transact a great part of their business over it. Women use it constantly to save steps and time in social and household duties. In an increasing number of ways, it helps to make this a united, more active, more efficient nation.

Simply by lifting the receiver you become part of a nation-wide communication system that uses 80,000,000 miles of wire, and represents an investment of more than \$4,000,000,000. Yet the cost of local service is only a few cents a day.

Subscribers who look back over the month and consider what the telephone has meant to them in convenience, security and achievement are quick to appreciate its indispensable value and reasonable price.

Frequently you hear it said—"The telephone gives you a lot for your money."

★ AMERICAN TELEPHONE AND TELEGRAPH COMPANY ★



A CITY OF TOMORROW

(Continued from page 348)

Commission, recommended 30 miles of deep-water berthing on the bay, ample for 300 ships of 500 feet in length. The passenger quay he would place at the junction of the Passaic and Hackensack rivers, known as Kearny Point. Port facilities in Newark Bay, he pointed out, would allow of direct transfer of freight from rail to vessel, and from vessel to rail, serving ten trunk-line railroads and he recommends the canal through the Bayonne peninsula already mentioned.

The housing plans of the Board were accepted by General Jadwin and his associate consulting engineers, but they do not look forward to housing all the workers in the meadows as many communities are already developed in reach of the proposed industrial section where there is land for sale and houses available. Then, too, there may be many workers who would prefer to live elsewhere, especially if the cost is less, and there are some people who prefer not to live under the most modern conditions.

To reclaim the meadows, build docks, fit up parks, relocate railroads and build roads and bridges, will cost a great deal of money. The dredging and filling alone for the Hackensack region is estimated to cost \$120,000,000. As we shall presently see, there is even a greater sum required for a satisfactory water supply and sewerage system; as a matter of economy, the water mains and sewers should be built before the land is filled in. It is probable that that portion of the work which must of necessity be done by public agency may cost half a billion dollars. This means that the cost would be roughly \$20,000 per acre, or somewhere near 50 cents a square foot, rather a large sum for vacant made land.

THERE are two other phases of the whole plan of reclamation which do not seem to have had adequate consideration. This region is not any too well supplied with water; the courts have had many cases involving local controversies over water supply. It is true that there is one project which may be developed, which would cover requirements for perhaps 50 years. This project, known as the Chimney Rock, utilizes the water from five New Jersey tributaries of the Delaware River, as well as a direct intake from that river; and from five tributaries of the Raritan River. The system would yield 750,000,000 gallons daily, and the cost is estimated at \$184,000,000. The supply from the Delaware is, however, subject to the consent of the State of Pennsylvania, the State of New York already having consented to New Jersey's allotment. The New Jersey District Water Supply Commission said in 1925 that the six counties covered by this system would need an additional 100,000,000 gallons per day every eight years, and this does not take into consideration the meadows reclamation.

Again, such a city would require an enormous expenditure for an adequate sewerage system as no general sewerage system exists, although the meadows are surrounded by small municipal systems. The lower Hackensack River has been condemned by health authorities as polluted. The Passaic Valley has a general system west of the Passaic River, with an outlet (Continued on page 352)



M. I. T. MEN

H. V. Coes - - - - '06
E. S. Coldwell - - '15
S. J. Cole - - - - '26
J. A. Emery - - - '93
Page Golsan - - - '12
J. F. Greene - - - '07
F. K. Merriman - '04
G. I. Rhodes - - - '05
A. A. Uebelacker - '18
R. P. Westerhoff - '27
H. E. Whitaker - - '09
J. E. Woodbridge '93

Design Construction Management Reports

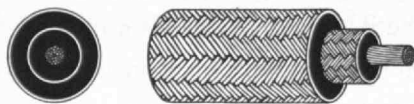
Ford, Bacon & Davis, Inc.
Engineers

39 Broadway, New York City

Philadelphia Chicago San Francisco



IGNITION WIRE FOR GASOLINE ENGINES with



U. S. Patent No. 1458803

INTERLAYER BRAID CONSTRUCTION

TEST and service prove that ignition wire made with the Interlayer Braid between the walls of insulation is more reliable than insulation with the solid wall of rubber.

Airplanes, automobiles, trucks, motor busses, tractors, motorboats, and farm machinery all have severe conditions of service; and B.I.W. Ignition Wire is made to withstand these conditions.

Write us for samples and information

**BOSTON INSULATED WIRE
and CABLE COMPANY**
BOSTON, MASS.

DO YOU KNOW YOUR MODERN WORLD?



VANITY FAIR kleiglits The Modern World and everything that makes it modern. It is a kaleidoscopic review of life today—its progress, politics, excitements, pleasures, and fashions. VANITY FAIR deals clearly and brilliantly—sometimes devastatingly—with the personages who make the wheels go round—politicians, actresses, sculptors, sportsmen, social leaders and—why not?—night-club hostesses and tap dancers.

New Presidential timber matures in Van Hornesville or Englewood—its significance is revealed in VANITY FAIR. A new "torch song" crooner captures Broadway—VANITY FAIR pictures and describes her. A new novelist wins the spotlight; a new satirist punctures the balloon reputation of statesmen or prize-fighters; a new fad catches the whim of Park Avenue or Lake Forest—all becomes grist for VANITY FAIR's hungry mill.

VANITY FAIR • 2 YEARS FOR \$4

THE CONDÉ NAST PUBLICATIONS, INC., Graybar Bldg., New York

- ☐ Enclosed find \$4.00 for **TWO YEARS** (24 issues) of **VANITY FAIR**
☐ Enclosed find \$3.00 for **ONE YEAR** (12 issues) of **VANITY FAIR**

NAME _____

STREET

CITY

STATE

Col 3-31

A CITY OF TOMORROW

(Continued from page 350)

at Robbins Reef. Sketches have been made for a general sewerage system for the upper part of the region, to cost some \$180,000,000.

There seems to be no doubt that if any general scheme for the reclamation of the meadows is to be carried out at all, it must be by the State itself, either through its existing officials, or by some commission appointed for this special purpose. The legal power is vested in the State to do such work when it is an enterprise in which the public has an interest, and the State alone can exercise the right of eminent domain, and the powers of taxation. Those who are interested in this phase of the subject may well examine the report on the legal side of the question, in *Appendix C* of the fourth volume of the Regional Survey. That the control must be unified, and vested in some such commission, seems self-evident.

Bills have been introduced into the New Jersey Legislature to constitute such a commission, one of four regional commissions for the State. These would not be established until the bills pass the Legislature and are approved by the voters in the several districts at a referendum. There would be eight New Jersey counties in the North Jersey Regional Commission: Essex, Union, Passaic, Bergen, Hudson, Somerset, Morris and Middlesex. The commission, if constituted, would take over the work of the Meadows Reclamation Commission and the North Jersey Transit Commission, which have completed their survey and planning work. Whether the Legislature at the present session will pass this bill or a similar measure, or authorize any action at all, is impossible to predict at this time.

Whether any immediate action is to be taken, or the whole matter is allowed to remain in *status quo* for the present, the whole idea of reclamation as applied to this marsh embodies a program of municipality construction which is unique in its conception, and of gigantic magnitude.

Although quite separate from the plans for reclamation, a movement which is on foot to consolidate many of the municipalities in this region into one large city may have its effect on reclamation. Such consolidations are becoming quite common in the United States, the largest being that when New York City was formed from the various boroughs. A very recent publication by the



William Leavens & Co., Inc.

32 Canal Street, Boston

at Haymarket Square

William H. Coburn & Co.

Investments

68 Devonshire St.

Boston, Mass.

TECHNOLOGY ALUMNI AND FRIENDS ARE INVITED TO VISIT OUR STUDIO

PORTRAITS of Quality

TECHNOLOGY PHOTOGRAPHIC AND PHOTOSTAT SERVICE

ROOM 11-003

M. I. T.

National Municipal League, based on research financed also by the Russell Sage Foundation, gives a very full treatment of the organization and government of such consolidations, under the title, "The Government of Municipal Areas."

CAUSES OF MISBEHAVIOR

(Continued from page 328)

sixteen, the sex division showing an approximate parity. Careful survey of the medical and social histories of these children demonstrated that 104, or approximately one-sixth of the group, could warrantably be regarded as presenting behavior problems. In some instances, rather less than half, this was the major feature of the so-called chief complaint; in the remainder it was one fact in the history presented with varying degrees of emphasis.

The scatter of the behavior problems was a wide one. In the group were collected a homicide, a number of thieves, vagrants and incendiaries. Sex delinquency played but a very small part in the entire group, only four of the children warranting such a designation from the standpoint of a reasonable standard of conduct. A few children were pathological liars, a much larger number bullies, while egocentricity, viciousness, disobedience, and asocial and anti-social conduct were represented in significant proportion. From the writer's own contact with the children he would feel that the report of egocentricity fell far short of its actual presence. In many instances, however, intense selfishness on the part of the child was no more than an inevitable outcome of an uncritical and highly injudicious parental over-solicitude. Equally, many of the so-called morose children presented no more than a different personal reaction to this same exciting cause. In addition to the actual behavior problems as such, certain mental traits were reported in many of the cases which must be regarded as definitely causative or contributory to the major condition. Mental retardation, the existence of various phobias, and numerically most important, the presence of grave emotional instability are to be listed. Fully two-fifths of the entire group were reported in this last class, and a more critical analysis of the remainder would have led to the inclusion of many of them.

It will be remembered that these children had all received a very careful and complete diagnostic study, the end result of which had been the establishment of the existence of various disease conditions and functional derangements determining the purely medical aspects of the case. On the basis of these studies it is possible to group the children in accordance with the etiology disclosed by the diagnostic study. In round numbers two-thirds of the children presented as the major condition a functional derangement of one of the endocrine glands. The great majority of these children were pituitary cases; a much smaller but still significant fraction exhibited disturbed thyroid function. Only two of the entire group showed a condition associated with the primary organs of sex, a fact the implications of which need not be discussed in this presentation.

The remaining third of the behavior group gave no evidence of any involvement of any of the ductless glands but could, on the other hand, (Continued on page 354)

The COPLEY-PLAZA Boston

Recognized as one of the finest hotels in the world, richly furnished, modern in every respect . . . located in historic Copley Square, probably the most accessible and attractive spot in Boston.

Rooms \$4 and up.

ARTHUR L. RACE

Managing Director



Tea Dances every Wednesday and Saturday afternoon
—4:30 to 7

Supper Dances nightly.

Music, Meyer Davis
Le Paradis Band,
direction of Joe Smith.



HOTEL OF
DISTINCTION

ROTOGRAVURE ▼ PRINTING ▼

A Complete Rotogravure Department, the first installation in New England by a commercial printing firm, is now in full operation at our plant. This new department is equipped to produce ROTOGRAVURE PRINTING in any desired form and quantity. A complete service, including photography, art work and copy writing, is available. It is our intention to produce ROTOGRAVURE PRINTING of quality comparable to that of our book, catalog and general commercial printing.

THE MURRAY PRINTING COMPANY

KENDALL SQUARE · CAMBRIDGE

TELEPHONE 5650 UNIVERSITY

BURTON-FURBER COAL CO.

Associated with BATCHELDER WHITTEMORE COAL CO.

Selected Grades**ANTHRACITE AND BITUMINOUS**

10 High Street

BOSTON

HUBbard 3100

MERRIMAC CHEMICAL CO.

148 STATE STREET

BOSTON, MASSACHUSETTS

WORKS AT

WOBURN AND EVERETT, MASSACHUSETTS

*THE largest and oldest chemical concern
in New England*FOUNDED
IN 1853

Walker Memorial Dining Service

Meals Served During the Academic
Year for Any Type of Technology
Alumni Gathering

CLASS DINNERS GIVEN SPECIAL
ATTENTION

The recreational facilities can be made
available if desired

*Menus submitted upon request***Address**

A. W. Bridges, Walker Memorial, M. I. T.,
Cambridge, Mass.

CAUSES OF MISBEHAVIOR

(Continued from page 353)

be placed specifically into two somewhat elastic categories. The dominant fraction (28) were classified as neurological cases, with those demonstrating lesions of the central nervous system constituting two-thirds of the group. The second and smaller fraction of the non-endocrine cases (8) all gave evidence of toxic states associated with severe infective processes. Of the much larger group of children in the original selection in whom no behavior problem was reported, there existed a very wide scatter of other disease conditions. None of these, however, contributed to the behavior group, there being seemingly in them no association between a social and a medical problem.

In any individual the existence of a primary disease condition or functional derangement does not eliminate the coexistence of other similar departures from the normal which are secondary in import to the first and may or may not be associated with it. Recognizing this fact, it seemed to be significant to analyze the entire series of little patients from the standpoint of the incidence of head injury which could produce damage to the central nervous system. The predominance of this single factor in the non-endocrine group pointed directly to the utility of such analysis. The principal indices were the records of trauma either at birth or during the later years, a past history of known disease such as encephalitis or meningitis, and the existence of physical stigmata which could derive only from brain injury. Over half of the endocrine and two-thirds of the non-endocrine groups, together a total of 61% of the series, gave evidence of some type of head injury. If to these, for anatomical reasons, be added the remainder of the pituitary cases, the number of children with existent or implied head pathology assumes a dominant proportion in the group. It does not, however, comprehend them all and this fact must be borne rigorously in mind in any final interpretation.

A SURVEY of the large amount of material drawn from the clinical and laboratory studies of these little patients can find no place in the presentation of this material. It may be said, however, in summary that throughout the entire group there existed unmistakable evidences of profound metabolic disturbance. While these evidences varied in degree and in kind from case to case, not one of the children in the group failed to exhibit a series of purely objective indications of significant physical disorder.

That such a condition should exist in the endocrine group, is no more than would be anticipated as the glands of internal secretion are among the potent regulators of metabolism and of bodily function. The evidences in the non-endocrine group, however, were equally clear cut. Metabolic disturbance constitutes one positive, demonstrable feature common to every member without exception of the entire group. Metabolic disturbance, further, is estimated and measured in purely objective terms, leaving no room for the variations of opinion which might be found in more subjective types of evidence. The behavior problem is a second *(Concluded on page 356)*

**For the enjoyment
of SHELTON guests:**

A large and attractive
swimming pool — FREE
to all guests at all hours.

Four comfortable lounges
Solarium

Roof Garden

Game rooms—bridge, chess

Gymnasium

Billiard room

Library and reading room

Bowling alleys

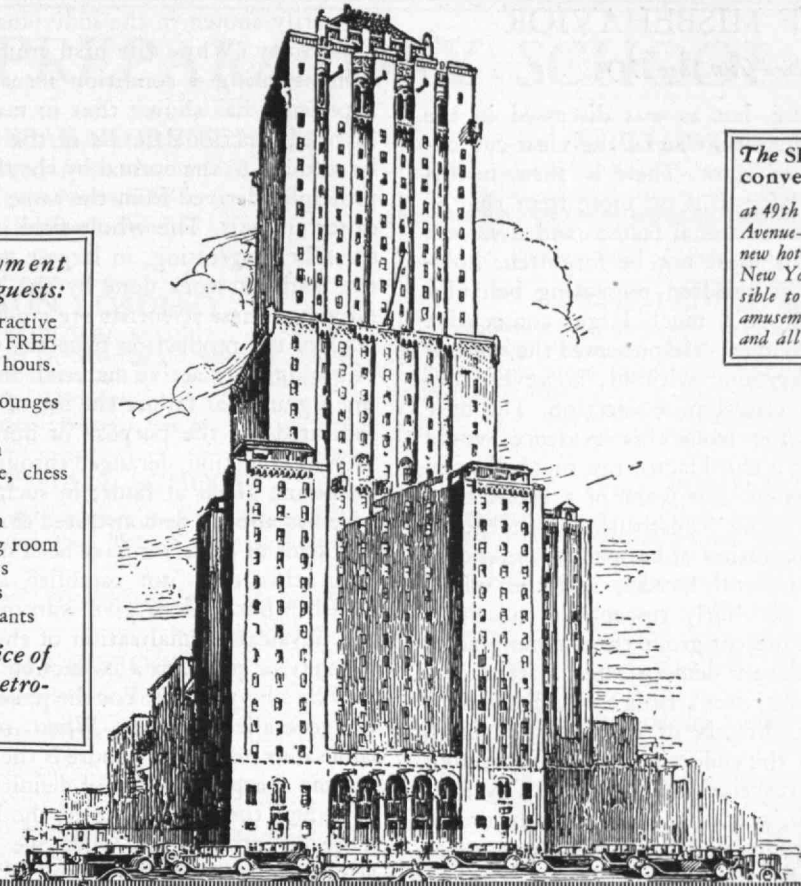
Squash courts

Excellent restaurants

*and every service of
a first class metro-
politan hotel.*

**The SHELTON is most
conveniently located**

*at 49th Street and Lexington
Avenue—in the center of the
new hotel district of mid-town
New York, and easily acces-
sible to all smart shops, the
amusement life of the city
and all transportation.*



The SHELTON

New York's most unusual hotel

An outstanding favorite among visitors
to the city. Combines the attractions
of a private club and metropolitan hotel

A UNIQUE, club-like atmos-
phere most unusual to find in
a metropolitan hotel. Where vis-
itors to the city may enjoy
themselves as much as though
they were guests of a large pri-
vate club. Yet in spite of its

many extra attractions the room
charges are no higher than you
have to pay in other high class
hotels where the most you can
expect is the ordinary "room and
bath." You'll like *The SHELTON*.

*\$3 to \$6 a day for one person; \$6 to \$9 a day
for two; larger accommodations always available.
Special rates for those staying a month or more.*

The SHELTON - - - New York
at 49th Street and Lexington Avenue



Ready for a plunge in *The SHELTON'S* famous swimming pool

CAUSES OF MISBEHAVIOR

(Concluded from page 354)

putative common finding, but as was discussed in the body of the text, its definition lacks the clear-cut objectivity of the preceding factor. There is, then, in this group an association — for it is no more than that — between a group of constitutional factors and a variety of behavior problems. It must not be forgotten, however, that this group of children presenting behavior problems was drawn from a much larger consecutive series in which the individual case presented the same or similar etiological background without, however, conforming to the present criterion of selection. The only warrantable interpretation from this evidence would seem to be that there is a third factor not touched upon in the preceding discussion. For want of a better term this could be designated as the "constitutional tendency," a state implying an integration of known and unknown hereditary and environmental factors, and the whole producing an habitus peculiarly susceptible to certain outside agencies. In the present group the common factor which has been objectively demonstrated is that of a disturbed metabolism, the latter arising through a variety of agencies and acting, directly or indirectly, through the hormone control of the endocrine glands or through the manifold intrinsic functions of the nervous system, or through one or both, working independently or together. In the present group the union of these two major agents would seem to be associated with the existence of a mental status engendering a behavior problem. The word "associate" is used advisedly, as an attempt to establish a definite causal relationship in the light of our present knowledge would involve a series of assumptions for which no established warrant exists.

ONE more consideration may be touched upon briefly. The metabolic factor may derive from organic change as in those cases presenting lesions of the central nervous system, or from functional derangements as

primarily shown in the individuals presenting an endocrinopathy. While the first group must be regarded as demonstrating a condition insusceptible of correction, experience has shown that in many instances, at least, lowered functional levels of the individual glands may be restored to the normal by the therapeutic use of active principles derived from the same glandular structures of other animals. The whole field of endocrine therapy is steadily progressing, in largest measure as the result of the brilliant work done by the biochemists and physiologists. These scientists are gradually solving the problems of the production from the various animal sources of biologically active material. In the child demonstrating a glandular failure the use of such therapy is clearly indicated for the purpose of normalizing the levels of physical function, deranged through the aberration of the endocrine gland at fault; in such normalization experience has already demonstrated that associated individual problems of behavior have been simultaneously resolved. Even this does not establish a causal-resultant relationship but it does give warrant for the hope that in the physical normalization of the endocrine child with a behavior problem a correction of the latter difficulty may be a by-product. For the present one is not permitted to generalize further. When reported cases number thousands instead of hundreds the physical elements may assume sharper outlines of definition. When we are able to reduce the delineation of the behavior problem to a more objective basis, when we are able to make due allowance in our estimate for factors which today may only be designated as extraneous, when, in short, we can define aberrant behavior in terms of common acceptance and agreement and with due allowance for the mutability of the dominant social factor, then it may be possible to demonstrate a closer interrelationship and thus indicate more sharply the lines of curative or of palliative approach.

California Preparatory School FOR BOYS

Thorough training in scholarship and physical development.
Junior College. College Preparation. Lower School.
Athletics, Music, Riding, Swimming and Golf.

Address, THE HEADMASTER Box T Covina, California

CHASE & GILBERT ENGINEERS and BUILDERS

Park Square Building Boston, Massachusetts

We are prepared to make reports on,
to design and to build —

HYDRO-ELECTRIC PLANTS
STEAM POWER PLANTS INDUSTRIAL PLANTS
TUNNELS DAMS BRIDGES

Royce W. Gilbert, '09

MONSON ACADEMY

An Endowed School in Its 128th Year. For Boys Who Are Going to College. Small Classes. Experienced Instructors. Thorough Drill in Fundamentals. *For Catalog Address*

BERTRAM A. STROHMEIER, A.M., Headmaster,
Box T, Monson (In Central Massachusetts)

HAMILTON L. WOOD, '17

INSURANCE OF EVERY DESCRIPTION

Associated with


FIELD & COWLES, 40 BROAD STREET, BOSTON

HARVARD ENGRAVING CO.

MAKERS OF FINE

PRINTING PLATES

ENGRAVERS



ILLUSTRATORS

72 LINCOLN ST. COR. ESSEX BOSTON MASS.



PREPARATORY SCHOOLS



BERKELEY PREPARATORY SCHOOL

Thorough and adequate preparation for M. I. T.
Small classes, tuition \$350.00

GEORGE HOPKINSON, *Principal*

1089 Boylston Street

Boston, Mass.

BRIDGTON ACADEMY

NORTH BRIDGTON, MAINE

School for 100 boys 11 to 19, covering the work of grades 7 to 12. Organized Athletics. Winter Sports. Mountain Climbing. Cabin Building. 124th year.

H. H. SAMPSON, *Principal*, Box 26

CHAUNCY HALL SCHOOL

Founded 1828. The School that confines itself exclusively to the preparation of students for the Massachusetts Institute of Technology.

FRANKLIN T. KURT, *Principal*, 553 Boylston Street, Boston, Mass.

DWIGHT SCHOOL

72 Park Avenue, New York City

College and Regents' Preparation. 51st Year

ERNEST GREENWOOD, *Headmaster*

FRANKLIN AND MARSHALL ACADEMY

A Widely Recognized, Moderately Priced, Preparatory School. Whole-some School Life and Sports. Unusual Equipment and Location. 1200 Boys prepared for college in the last 30 years.

E. M. HARTMAN, Pd.D., *Principal*, Box 450, Lancaster, Pa.

HEBRON ACADEMY

The Maine School for Boys. A College preparatory school of high standing. Graduates in 22 Colleges. Strong Faculty of thirteen men. Athletics for all. Finest school skating rink in America. Fine dormitories for all.

RALPH L. HUNT, *Principal*, Hebron, Maine

HUNTINGTON SCHOOL FOR BOYS

Five Forms. Special two-year course for entrance to M. I. T.

Summer Session Send for catalogue

CHARLES H. SAMPSON, Ed.M., *Headmaster*

320 Huntington Ave., Boston

Tel. Kenmore 1800

MANTER HALL SCHOOL

71A Mt. Auburn Street, Cambridge, Mass.

Founded in 1886. Intensive Preparation for College Entrance. New dormitory accommodations. Staff of well-known specialists with years of successful experience.

MOSES BROWN SCHOOL

An Endowed New England School with an excellent record in preparing boys for leading colleges. 25-acre elm-shaded campus. Athletic Fields. Gymnasium. Swimming Pool. *For Illustrated Catalog Address:*

L. RALSTON THOMAS, *Headmaster*, 257-A Hope Street, Providence, R. I.

NEW HAMPTON

109th year. A New Hampshire School for Boys. Six Modern Buildings. Thorough College Preparation. Intensive Course in Business. Athletics for Every Boy. Moderate Tuition. *Address*

FREDERICK SMITH, A.M., Box 198, New Hampton, N. H.

NORTHWOOD SCHOOL

In the heart of the Adirondacks. Under Lake Placid Club Education Foundation. Unusual success in college preparation. Emphasis on recreation that can be continued thruout life. Winter sports. Separate junior school for boys, 8 to 12.

IRA A. FLINNER, Ed.D., *Director*, Box T, Lake Placid Club, N. Y.

THE PEDDIE SCHOOL

An endowed school, with emphasis on preparation for Board Examinations. Many graduates at M.I.T., Harvard, Yale, Princeton, and Dartmouth. Exceptional equipment, 150-acre campus, all athletics, 9-hole golf course. 65th Year.

Address: R. W. Swetland, LL.D., *Headmaster*
Box T, Hightstown, New Jersey

THE POND SCHOOL

Separate Instruction of Each Student. Supervised Study under Instructors. Training in the most effective Methods of Study and Concentration. Rapid and Thorough Preparation for College. W. McD. POND, *Headmaster*, 42A Quincy St., Cambridge, Mass.

Porter 1971

RIVERDALE

A Country School for Boys. Well-balanced program. One of the best college board records. Athletics. Student activities. Fire-proof dormitory. 24th year. *For catalogue address*

FRANK S. HACKETT, *Headmaster*, Riverdale-on-Hudson, N. Y.

ROXBURY SCHOOL

CHESHIRE, CONNECTICUT

Roxbury combines the advantages of thorough scholastic training by small group instruction with those of organized school discipline.

A. N. SHERIFF, *Headmaster*

ST. JOHN'S PREPARATORY SCHOOL

DANVERS, MASS.

A Country School, Eighteen Miles from Boston. Preparing Catholic Boys for College and Technical School. Every Modern Facility for Student Life. For catalog or personal interview

Write to PRINCIPAL: St. John's Preparatory School, Danvers, Mass.

THAYER ACADEMY

Every year the Academy sends a group of students to Technology. Recognized by Technology alumni as an exceptionally good fitting school. Both day and boarding pupils accepted. *For catalogue address*

STACY B. SOUTHWORTH, *Headmaster*, South Braintree, Massachusetts

TILTON SCHOOL

Prepares thoroughly for Technical Institutions and Colleges. Well endowed, moderate rates, excellent facilities. Separate Junior School. 2½ Hours from Boston. 84th Year. Correspondence and inspection invited. Catalogue. T. W. WATKINS, *Headmaster*, Tilton, N. H.

WILLISTON ACADEMY

An endowed school for boys whose parents desire the best in education and care at a reasonable cost. Preparation for all colleges.

Junior School for young boys. *Address*

ARCHIBALD V. GALBRAITH, *Principal*, Box T, Easthampton, Massachusetts

WORCESTER ACADEMY

SAMUEL F. HOLMES, *Headmaster*

GEORGE D. CHURCH, *Registrar*

96th Year. 250 Boys. \$1000-\$1200. Unusually well equipped for Science and Mathematics. Kingsley Laboratory exclusively devoted to these two departments. *Write for descriptive catalogue*—Station 125, Worcester, Mass.

New England Coal & Coke Co.

"The House of Service"

NEW RIVER POCAHONTAS

• COALS •

STOKER and SLACK for Powdered Fuel
Plants and Automatic Stokers

250 STUART STREET BOSTON, MASS.



BUFF Transits and Levels

are used on all largest works and by U. S. Govt. for
utmost precision

New catalog, just issued, sent gratis

BUFF & BUFF CO. Boston 30, Mass.

Send for Free pamphlet—"The Inside
of an Engineer's Transit"

Charles F. Tancred

IN CHARGE OF
CLASS OF 1928 ENDOWMENT

MUTUAL LIFE INSURANCE COMPANY OF NEW YORK
31 Milk Street, Boston, Mass.

FREDERICK BERNARD, '17

Special Agent

NORTHWESTERN MUTUAL LIFE INSURANCE CO.

235 PARK SQUARE BUILDING BOSTON, MASS.

CHARLES H. JOHNSON

M. I. T., '05

New England Mutual Life Insurance Company

80 FEDERAL STREET Liberty 0553 BOSTON, MASS.

THE RUMFORD PRESS

Concord, New Hampshire

1 1 1

*Makers of Magazines and Books
of Distinction*

THE INSTITUTE GAZETTE

(Concluded from page 343)

undergraduate at Wooster College and later at Princeton University. He recounted several unfortunate experiences of faulty supervision of dormitories which could never occur at Technology due to the efficiency of the Dormitory Committee and the strength of the undergraduate student government.

To Dr. Prescott, as Chairman of a special committee of the Alumni Council to name dormitories, consisting of Thomas B. Booth, '95, and Gorton James, '10, was accorded the honor of informing the dormitory men of the names of the new units. "It is my privilege," said he, "to say a few words regarding the buildings, but I shall try to make my remarks brief. You are undoubtedly, in part, familiar with the history of these buildings, the work for which was begun five years ago by the Alumni Association under the presidency of Mr. Charles Hayden, '90. . . .

"Nearly 1,400 Alumni, impressed with the desirability for more dormitories, responded to the idea and their contributions augmented by the generous action of the Corporation has made possible the construction of these new buildings. With their completion, the Alumni Council appointed a committee to suggest inscriptions which might suitably commemorate the action of the Alumni, and this committee assumed that a part of its duties might properly be to recommend names for the structural units or houses which compose this group. . . .

"As the older group of dormitories, in which the units are named for early professors of distinction may be regarded as the Faculty Group, the newer group, with such connecting buildings as may later be added to complete the quadrangle, is to be known as the Alumni Group. The men whose names I shall read to you have not been selected for this distinction simply because of their generous gifts of money for the construction of these dormitories; nor have they been chosen solely because of their interest in the welfare of the student body — great and important as this is. They have been chosen and will stand before you and your successors because they represent the types of citizenship and professional service of integrity, high character, and manhood which we would like to have held perpetually before every student."

The first unit in the group in which is located the common lounge and social room is named Munroe in honor of the late James P. Munroe, '82. The other Alumni honored with dormitories bearing their names are: Charles Hayden, '90; A. Farwell Bemis, '93; the late Charles W. Goodale, '75; the late Kenneth F. Wood, '94; and the late William W. Walcott, '01. The units previously named "1893" and "1901" are known as "Bemis" and "Walcott" respectively. The social room in Munroe is named "Burton" in honor of Alfred E. Burton, Technology's first Dean of Students.

Preceding the combined dinner and dance with the dormitory men, the 150th Meeting of the Alumni Council was held, presided over by Donald G. Robbins, '07, Vice-President of the Alumni Association. At this meeting, the Committee to Determine Official M. I. T. Colors was commended and discharged.



PROFESSIONAL CARDS



JACKSON & MORELAND

Consulting Engineers

31 ST. JAMES AVENUE

BOSTON, MASS.

H. K. BARROWS, '95

M. Am. Soc. C.E.

CONSULTING HYDRAULIC ENGINEER

Hydro-electric developments — Water supplies. Reports, plans, supervision. Advice, appraisals.

6 BEACON STREET

BOSTON, MASS.

EADIE, FREUND AND CAMPBELL

CONSULTING ENGINEERS

110 WEST FORTIETH STREET

NEW YORK CITY

PLANS AND SPECIFICATIONS — EXAMINATIONS AND REPORTS
Power, Heating, Ventilating, Electric, Plumbing, Sprinkler, Refrigerating, Elevator Installations, etc., in Buildings and Industrial Plants

J. K. CAMPBELL, M. I. T. '11

METCALF & EDDY, ENGINEERS

HARRISON P. EDDY
CHARLES W. SHERMAN, '90
ALMON L. FALES
FRANK A. MARSTONJOHN P. WENTWORTH, '10
HARRISON P. EDDY, JR., '17
ARTHUR L. SHAW, '09
E. SHERMAN CHASE, '06*Water, Sewage, Drainage, Refuse and Industrial Waste Problems
Laboratory*

STATLER BUILDING

BOSTON, MASS.

THOMAS B. BOOTH, '95

AMASA M. HOLCOMBE, '04

JOSEPH Y. HOUGHTON, '26

Emery, Booth, Varney, and Townsend 50 Congress St., Boston
Emery, Booth, Varney, and Whittemore 60 E. 42nd St., New York
Emery, Booth, Varney, and Holcombe 900 F St., Washington

PATENT LAWYERS

Merton L. Emerson

Management Engineer
Associated with

Scovell, Wellington & Company

Accountants — Engineers

BOSTON

NEW YORK

CHICAGO

PILES

FOUNDATIONS

CAISSONS

FOUNDATION & CONSTRUCTION CO.

108 Massachusetts Avenue
Boston, Mass.

Telephone Kenmore 6868 - 6869

Philadelphia office 1320 Race St.

ALL KINDS OF FOUNDATION WORK

FAY, SPOFFORD & THORNDIKE
ENGINEERS

BOSTON, MASS.

BRIDGES

WATER SUPPLY AND SEWERAGE

PORT AND TERMINAL WORKS

FIRE PREVENTION

INVESTIGATIONS

DESIGNS

SUPERVISION OF CONSTRUCTION

STANLEY G. H. FITCH '00

CERTIFIED PUBLIC ACCOUNTANT

of PATTERSON, TEELE & DENNIS
1 Federal Street, Boston, Mass.

AUDITS

INVESTIGATIONS

New York

Boston

Washington

Baltimore

MAURICE A. REIDY

Consulting Engineer

STRUCTURAL DESIGNS

FOUNDATIONS

CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

Estimates and Appraisals

44 SCHOOL STREET

BOSTON, MASS.

CHAS. T. MAIN, INC.

ENGINEERS

*Industrial Buildings, Electrical, Steam and Hydraulic Engineering
Valuations and Reports, Consulting Engineering*

201 Devonshire Street

Boston, Mass.

ARCHIBALD H. SPAULDING, '14

PHILIP B. TERRY, '13

SPAULDING-MOSS COMPANY

*Blue Prints**Photostat Prints**Planograph Prints*

BOSTON: L1Berty 3000

SPRINGFIELD: Dial 2-3000

BIGELOW, KENT, WILLARD & Co.

INCORPORATED

CONSULTING ENGINEERS AND ACCOUNTANTS

Merchandising Counselors

PARK SQUARE BUILDING, BOSTON, MASSACHUSETTS

John A. Willard, '09, Treas.

George W. Fuller
J. R. McClintock

FULLER & MCCLINTOCK

ENGINEERS

NEW YORK — 170 Broadway

PHILADELPHIA — 42 South 15th Street

F. G. Cunningham
C. A. Emerson, Jr.Water Supply and Water Purification
Sewerage and Sewage Disposal
Disposal of Industrial WastesInvestigation of Epidemics
Garbage Collection and Disposal
Valuations of Public Utilities

DIVISION OF INDUSTRIAL COÖPERATION & RESEARCH

RESEARCH

THROUGH this Division the equipment of the Institute Laboratories and the experience of its staff members are made available to a limited extent for the study of industrial research problems.

There are excellent facilities available for research in Physics, Chemistry, Biology, Metallurgy, and the principal branches of Engineering.

Inquiries regarding the service should be addressed to the Division.

PERSONNEL

THE Division maintains a list of graduates, with records of their experience and special qualifications for engineering and technical work. A list is kept of positions open.

Alumni are urged to report promptly changes of address, or changes of business connections. Officers of local Technology Clubs and Class Secretaries are urged to acquaint the Department with information which may come to their notice of Alumni interested to make new connections, or of positions open.

Address communications to Personnel Department.

DIVISION OF INDUSTRIAL COÖPERATION & RESEARCH

MASSACHUSETTS INSTITUTE *of* TECHNOLOGY , CAMBRIDGE



ADVERSARIA



A Tribute to Waldemar Lindgren

¶ At the Annual Dinner of the American Institute of Mining and Metallurgical Engineers on February 18, the following tribute was paid WALDEMAR LINDGREN, Professor of Geology at the Institute, by Dr. George Otis Smith: "Mr. President, it is a privilege and a pleasure to come to New York when speaking the truth in praise of a man is in order — and personally I keenly appreciate having the truth told about a geologist. The truth about Waldemar Lindgren might be concentrated into these few words — a great and good man. Why say more? Simply because we love to pay due tribute to one so eminent and so modest.

"... In honoring Waldemar Lindgren we are honoring not only American science but also the science of his native land, for he well represents that large body of Swedish geologists and engineers who have contributed so much to the world's store of knowledge and metals.

... His career has been notable in its volume and quality of output; as a Government geologist for 28 years when he did so much in raising the scientific standards of the United States' Geological Survey; as a mining geologist in private employ, when he widened his knowledge of ore deposits by adding Australia and South America, Mexico and Canada to his roll of scientific conquests; and as a teacher at a great institution passing along the torch to those inspired by his words and example.

"While a field geologist of the Survey, Mr. Lindgren was the chief and friend of the young geologist whom now, after 35 years so many present here tonight delight to call 'The Big Chief,' Herbert Hoover. Mr. President, it is my happy duty to present you, as the latest addition to a most distinguished list of engineers of world-wide fame, Professor Waldemar Lindgren, for the highest honor that our Board of Directors can bestow, Honorary Membership in The American Institute of Mining and Metallurgical Engineers."

Honored

¶ WILLIS R. WHITNEY '90, by receiving the Franklin Medal, one of the most distinguished honors conferred in America on a physicist. The Franklin Institute will confer this medal on May 20.

¶ NORMAN L. BOWEN '12, by being awarded the Bigsby Medal of the Geological Society of London, in recognition of the value of his study of the physical chemistry of igneous rocks. Dr. Bowen is attached to the Geophysical Laboratory of the Carnegie Institution.

¶ GEORGE G. PERRY '30, by being selected to assist in building a telephone line from Buena Ventura to Bogota in

Colombia, South America. He is an electrical engineer with the Automatic Electric Company of Chicago, and is one of the two men selected to have charge of the work.

¶ LUCIAN W. BURNHAM '14, by being decorated by the President of Haiti for his work with the gendarmie of Haiti. Captain Burnham is with the Marine Corps.

Resigned

¶ PHILIP D. TERRY '10, his commission as an officer of the army with the approval of the President, according to War Department orders received at the headquarters of the Second Corps Area on Governors Island. Captain Terry began his military career in the coast artillery in November, 1917. He held the rank of major at the close of the World War and was commissioned a captain of regular coast artillery on July 1, 1920.

Published

¶ By SAMUEL C. PRESCOTT '94, in collaboration with Professor Charles-Edward A. Winslow of Yale University, the fifth edition of "Elements of Water Bacteriology," extensively revised.

¶ By LESTER B. BRIDAHAM '23, a unique book of architectural research, "Gargoyles, Chimeres and the Grotesque in French Gothic Sculpture." This book sells for \$18.00 and contains 600 clear photographs showing the grotesque, sculptured detail found in cathedrals and Gothic edifices throughout France. Besides the photographs, the book gives an introductory text (treating with the historical setting) by the author and a preface by the noted architect, Ralph Adams Cram. Mr. Bridaham's success is all the more heralded since it was only a few years ago that he developed an artistic leaning.

¶ By ERNST A. GUILLEMIN '24, a textbook called "Communication Networks." Volume I, "The Classical Theory of Lumped Constant Networks" has just been published.

Elected

¶ LOUIS S. CATES '02, to the Presidency of the Mining and Metallurgical Society of America, succeeding G. Temple Bridgman, and WILLIAM D. B. MOTTER '05, to the Secretary-Treasurership of the same organization.

Appointed

¶ C. HERBERT TAYLOR '22, principal of the Edward Little High School of Auburn, Maine. Mr. Taylor has been sub-master of the Brookline High School.

¶ JOSEPH S. WARD, JR., '22, to be Secretary to Lieutenant Governor William S. Youngman. Mr. Ward who is a practising attorney, is the first person to hold this office. He served in the World War, is a member of the local Legion Post, and holds commission in the Engineers Corps, R.O.T.C.

Deaths

¶ Reports have come to The Review since the last issue of the decease of the following:

¶ ALEXANDER LUCHARS '73, on February 19, at his home in Montclair, N. J.

¶ HARRY M. MONTGOMERY '79, on February 14, in Chicago. Mr. Montgomery, who was a native of Lafayette, Ind., was a well known mechanical engineer.

¶ GEORGE R. WALLACE '81, on January 28, in Fitchburg, Mass. Following graduation he began his industrial career in his father's paper mills, later becoming head of the organization now known as the Fitchburg Paper Company. Prior to his retirement 10 years ago, Colonel Wallace had served as President of the Grant Yarn Company, Shirreffs Worsted Company, and the Nashua River Reservoir Company. He was also a heavy stockholder in the Fitchburg Yarn Company and the Parkhill Manufacturing Company, and a director of the Fitchburg Railroad.

¶ MATTHEW M. BLUNT '86, on January 31, at Charlestown, Mass. He had been employed since 1900 at the Charlestown Navy Yard.

¶ OREN S. HUSSEY '87, on February 8, at his winter home in Bradenton, Fla. For some years after graduation he worked with Thomas A. Edison and was a member of the famous Edison Pioneers, an association of men who were intimately connected with Edison during the early years of his work. During his business career he had been one of the division managers of the old Thompson-Houston Company, now the General Electric Company in Boston. He was also Treasurer of the Frank Ridlon Company and a member of the firm of Gregg and Son in Nashua. During the war he held a prominent civilian position in the Ordnance Division of the War Department.

¶ KNIGHT C. RICHMOND '90, on December 22, in Providence, R. I.

¶ A. BLAKELEY SMITH '93, on February 25, in Providence, R. I. Mr. Smith was associated for many years with his father in the firm of Albert W. Smith Company, wool merchants, with offices in Providence and Boston.

¶ HERBERT H. STARR '99, on February 18, at Germantown, Pa.

¶ SAMUEL N. W. HUFF '23, on December 30.

¶ ROBERT A. HOWES, Instructor in Economics at Technology 1923-1924, on February 26, at Palm Springs, Calif.

NEWS FROM THE CLASSES AND CLUBS

1872

The Secretary was entertained at a dinner by the Indianapolis Technology Club on Monday, February 9, at the University Club, and was able to tell them quite a little about our new President and about other interesting developments in Boston. He was able also to visit his daughter, Dr. Mildred Allen, who is engaged in research work at Oberlin College as well as in teaching, which included some very modern physics, especially directed to members of the department. —C. FRANK ALLEN, *Secretary*, 88 Montview Street, West Roxbury, Mass.

1873

It is with regret that we announce the passing of Alexander Luchars, who died of pneumonia at his home in Montclair, N. J., on February 19, 1931, a few hours before his wife, Mrs. Sarah Rose Yarnall Luchars, died of the same disease. Mr. Luchars was born in Quincy, Mass., 77 years ago. After his graduation from Technology, he joined the art staff of the old New York *Graphic*. He founded, in 1890, and became President of the Industrial Press of New York City, publishers of engineering books and magazines. Four years later he established *Machinery*, a trade magazine which has become one of the leading engineering journals of the world, with distribution in 37 foreign countries. In 1912 he founded the Machinery Publishing Company, Ltd., of London, England, and a similar organization in Paris.

In recognition of his expert knowledge of trade matters, he was appointed Special Trade Commissioner by the Secretary of Commerce in 1919 following the War, and, accordingly, was sent to Europe to investigate machinery markets. Mr. Luchars was also prominent in affairs of the community, being especially active in church work and in local politics, in which field he was instrumental in establishing a commission form of government. He was a close friend of Mayor Charles G. Phillips, whose tribute to Mr. Luchars shows the love and respect which belongs to a leading citizen. "If ever a man loved his home town; lived a quiet, useful life; made staunch friends; was thorough in everything he undertook; that man was Alexander Luchars. He never sought publicity for himself; many of us only know a small part of the good he accomplished. Alexander Luchars' civic pride was one of his many fine traits, and Montclair is a better place to live in for his having been among us."

Mr. and Mrs. Luchars leave a son, Robert B. Luchars, and two daughters, Mrs. Leigh Roy Urban, and Mrs. Kenneth Dow Ketchum. —GEORGE M. TOMPSON, *Secretary*, 8 Whittemore Terrace, Wakefield, Mass.

1877

The Secretary is publishing in this column from time to time excerpts from the delightful account of Henry D. Hibbard's world-tour.

"In making this world-tour, we were fortunate in many ways. Aside from the splendid programs arranged for us, we had almost continuously good weather, good health, good treatment, good friends, and good luck, the last particularly in avoiding political and criminal disturbances and activities in China, India, and Egypt.

"We traveled on 15 different ocean steamers, not counting ferry-boats; visited 16 countries, and slept on trains 20 nights in Japan, Chosen, Manchuria, China, India, Egypt, and Italy. The trains of the Orient were up to the best European standards. On one in India, I had a shower bath in the morning. On one in Egypt, our berths cost eight dollars gold each for the one night — the top price of all we occupied — but the room, though small, was the most luxurious of any.

"Others have well described the great stock sights of the places we visited; so this story tells mostly our personal observations and experiences. To preserve more of our remembrances, we have put in a large scrapbook some typical pictures and souvenirs which we collected, and we also have a box of papers relating thereto. I have also a number of books that were given me in Japan and Manchuria, and a box of small souvenirs in the form of stones, and so on. After our return I received from Baron Dan a fine specimen of stibnite, for which Japan is noted. I had asked him where I could procure a specimen. In Peiping I procured, through Lawrence Mead, a few ringing iron balls which I was told are used for finger exercises in rolling them about in the hand.

"*Statistics of Our Tour*: Time consumed, 7 months; Trains for trips of over 100 miles, 26; Ships taken, 15; Baggage moved, times, 80; Nights spent on trains, 20; Nights spent on boats, 83; Nights with the Whytes, 30; Nights in Mitsui House, 10; Nights with friends, 9; Nights in hotels, 59.

"*Countries Visited*, 16: Hawaii, Japan, Chosen, Manchuria, China, Hongkong, Manila, Straits Settlements, Kedah, Burma, India, Ceylon, Egypt, Italy, Greece, France.

"*List of Ships*: 1. *President Jackson*, San Francisco to Yokohama; 2. *Keifuku-Maru*, Shimonoseki to Fusan; 3. *Tenshu-Maru*, Dairen to Tientsin; 4. *Hoten-Maru*, Tsingtao to Shanghai; 5. *President Van Buren*, Shanghai to Singapore; 6. *Kedah*, Singapore to Penang; 7. *Tairea*, Penang to Rangoon; 8. *Angora*, Rangoon to Calcutta; 9. *British*, India to Ceylon; 10. *President Adams*, Colombo to Alexandria;

11. *President Harrison*, Alexandria to Naples; 12. *Ira-M (HPA-M) (Valiant)*, Brindisi to Piraeus; 13. *Stella d'Italia*, Piraeus to Brindisi; 14. *President Johnson*, Naples to Marseilles; 15. *President Fillmore*, Marseilles to New York.

"Leaving Kyoto, we went by train to Shimonoseki where we spent the night in the Sanyo Hotel. En route we passed many fields of tea. The next day, November 16, 1929, I visited the Yawata Steel Works, having got from a Japanese at the hotel who spoke English, full directions for reaching Yawata by ferry and trolley cars. From the ferry we got a glimpse of the southern end of the Inland Sea. On the trolleys I found, as usual, Japanese who spoke English and who told me where to change cars. The works are at Yawata in the northern part of the island Kyushu, and are owned and operated by the Japanese government. Baron Takuma Dan kindly secured for me permission to visit the plant. It was the day before the 29th anniversary of the founding of the works, in honor of which event the town of Yawata was profusely decorated with banners and bright colored hangings, red predominating.

"The office of the steel works is a large brick building of Western architecture. I was soon put in the charge of the engineer, Mr. T. Imura, who guided me around. He had studied two years in Germany and one in England; so his English, while serviceable, was limited. On a Ford automobile fitted with flanged wheels so as to run on ordinary railroad track, we rode from shop to shop, saving much time and many steps. There were three open-hearth plants, all basic, the oldest of which had a few 25-ton furnaces, while the newest had 12 of 60 tons capacity each. The capacity of the whole plant is 900,000 tons of steel ingots per year.

"A working mixer holding 200 tons was in effect a large tilting siema (open-hearth furnace), as in it nearly all of the silicon and half of the manganese were oxidized and so removed from the iron into the slag. The metal from the mixer contains about 3% of carbon and one of manganese. As a consequence of the practical absence of silicon in the mixer iron, and so in the charge, corrosion of the siema bottoms was slight, and repair thereof was quickly done, with small expenditure of basic material.

"I saw the finish, tapping and part of the teeming of one soft steel heat to finish 0.12% carbon. The boil in the furnace was only moderate, and not quite strong enough, presumably because of high residual manganese which my guide said was usually between 0.3 and 0.4%. A lot of aluminum, perhaps three or four pounds, was added in the ladle as the steel flowed in, which was a mistake. None was needed, as the metal in the

1877 Continued

molds rose seven or eight inches before starting to rim in. It effervesced, but not adequately. Imura said that they had trouble from cracks in their soft steel, which I judge to be probably tears between skinholes, because in the lower part of some, if not of most ingots, these holes must be near the surface. I did not see a charge worked in the melting furnace, so could not form an opinion as to why the soft steel rose in the molds. It may have been due to too high casting temperature of the metal, or to too high residual manganese, or too little ore in working the charge; and possibly to some other cause. The boil during working may have been too gentle because of high manganese or too little ore, and the metal in consequence may have contained too much skinhole gas (hydrogen). To test the metal in the melting furnace, they take a test ingot about $1\frac{3}{4} \times 1\frac{3}{4} \times 6$ inches, which they hammer down to a bar one inch square which is cooled and broken. The grain was fine in the one I saw, and I could not tell the carbon from the fractured surface, as practice with such test-pieces is needed. They took a slag sample which was poured into a shallow mold, making a cake about $3 \times 3 \times \frac{3}{4}$ inches thick, which had a black, shiny top surface and dark, earthy fracture.

"A soft steel ingot which I saw rolled in the blooming mill did not crack, nor did a rail steel ingot. Both rolled well; but an ingot with 0.20 per cent carbon cracked rather badly. The smaller of the two plate mills was rolling slabs about 20 by 6 inches in cross-section; and the plates were excellent. To clean them in the finishing passes, a little green brush was scattered on the hot plate, which, as it entered the rolls, hissed and sputtered in lively fashion and was effective for detaching scale.

"In the research laboratory I saw the sulphur print of a split mild steel ingot. Its primary skin of solid metal outside the skinholes was $1\frac{1}{2}$ inches thick. The skinholes extended half way up the ingot — not excellent, but fair. The primary and secondary skins together in the upper half of the ingot made a satisfactory thickness of four inches. Imura said they had drilled into both skinholes and intermediate holes and collected the gases over oil. Analysis showed the skinhole gas to be mainly hydrogen, and the gas in the intermediate holes to be chiefly carbonic oxide, as I surmised many years ago, I suggested to him the collection of the gases over mercury.

"A longitudinal section of a slab ingot about ten inches thick having 0.24% carbon and 1.23% manganese, had no skinholes whatever. What silicon and aluminum it contained I did not learn; but the high manganese pointed to the possibility of some solvent power of that element for the gases, and particularly for hydrogen.

"*Surphuric Acid Plant.* The sulphur for this was from pyrite which burned with a glow at about 800° or 900° C. I should judge, and without flame. The burnt ore they used in the blast furnaces. It does not

contain enough copper to pay to leach. Their iron ores come from China, Chosen, and Japan. Coke made from Kyushu coal two-thirds and Chinese coal one-third. It is strong coke, with 15–17% of ash." — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1884

The Secretary was surprised and shocked to receive a clipping from a Philadelphia paper giving J. Peterson Ryder's obituary.

Ryder was born June 29, 1864, in East Boston and was the second youngest man in the Class — the Secretary being the youngest. He took the industrial chemical option. In reply to a questionnaire he wrote "worked like a dog to get anything into my brain, and have always regretted that I did not first go to college." On graduation he was assistant in chemistry for two years at Tufts College, then science teacher at the Dorchester High School for a year, and then for five years at the East Boston High School.

Finding chemistry uncongenial, he surprised us all by going to the Boston Normal School of Gymnastics, and in 1894 became Director of Physical Training at the Drexel Institute, afterwards becoming Dean of men. In 1909 he was President of the Physical Training Association of Philadelphia. In June, 1929, he became Dean Emeritus and took a 15 months' trip around the world; apparently this overtaxed his strength as he became ill and died January 10, 1931. — AUGUSTUS H. GILL, *Secretary*, Room 4-053, M. I. T., Cambridge, Mass.

1886

It is with deep regret that the Secretary records the recent death of Matthew M. Blunt who had been employed at the Charlestown Navy Yard since 1900. A few moments after reaching his desk at the Navy Yard he was found unconscious and died before the resident physician could reach him. The sympathy of his classmates go out to his bereaved family. — ARTHUR G. ROBBINS, *Secretary*, Room 1-270, M. I. T., Cambridge, Mass.

1888

Edwin O. Jordan, Professor of Bacteriology at the University of Chicago for more than 35 years, whom we all remember as Editor-in-Chief of *The Tech* during our later years at the Institute as well as of the issue published at our Twenty-Fifth Reunion at Wianno, writes from Ancon, Canal Zone as follows: "Your letter has reached me here where I am spending the winter doing some research work at the Gorgas Memorial Institute. While at Porto Rico a year ago, I became interested in problems connected with tropical enteritis, one of the chief causes of death in that island and conducted some investigations at the School of Tropical Medicine in San Juan. This year I am trying out some of my hypotheses in a different locality. Among other things the curious tropical disease known as sprue is very prevalent in Porto Rico, but does not occur here in Panama where

otherwise conditions are quite similar. If I can find anything that will throw light on this matter I shall consider myself quite lucky.

"The quarterly system at the University of Chicago makes it possible for me to get away for the winter quarter and remain in residence in Chicago for the summer quarter. This arrangement introduced by President Harper gives great flexibility to the life of a teacher and investigator and is of enormous advantage to the student in avoiding waste of time and giving opportunities for concentration. I am glad to see it is being adopted by more and more American institutions.

"With respect to my less immediate activities, I have been occupied with the usual multifarious jobs of the American college professor — teaching (in recent years mostly graduate students), writing books (my *General Bacteriology* has just gone into its tenth edition and I have also written books and monographs on influenza, food-poisoning, and a good many special articles), a number of special investigative undertakings, and the usual pother of administrative detail.

"My three children are now pretty much on their own. My oldest son who has endowed me with two grandchildren, is Professor of History at Dartmouth. He is now abroad on one of the Guggenheim Fellowships. My second son, who is a young physician, now holds a position in the Billings Hospital (University of Chicago) in one of the branches of internal medicine. My daughter who graduated from Smith is now studying medicine. I am laying my plans to attend the Fiftieth Reunion. In case my old friends and classmates are able to bring the stock market back to normalcy, this should be possible. I often think of the old days in Rogers and the 'New' Building and wish I had been able to see my classmates more often."

Dwight Perkins, senior member of Perkins, Chatten and Hammond, architects, Chicago, is the most modest of all the modest men in the Class of '88. He deserves a niche in Chicago's Hall of Fame for his work which resulted in the purchase of 35,000 acres of forest near Chicago for public use in which there are hundreds of public golf courses which bring health and happiness to tens of thousands of Chicago's middle class thus assisting very much in improving conditions in that great city. His letter follows: "How I wish I could respond as a good classman should to your letter of November 24! The plain, long, and short of it is that I have never kept up my Institute connections, and I am very much out of any line of interest to my classmates.

"You got your wires sadly crossed when you remember me as a 'financial wizard.' The only thing I ever did that you could call 'wizard-like' was keeping down expenses. Affairs are a little better now, at least I get three meals a day, and I don't worry. Nevertheless, the bottom is knocked completely out of the architectural practice, and of recent years there is nothing to report.

1888 Continued

"I made a trip with my family, my wife and two children, to Europe in 1926, and was gone eight months — had a fine time. I have a son, born in 1907, who graduates this month as an architect from Cornell University. I have my home here in Evanston, to which you will always be welcome, and another home in Southern California, about six miles from Pasadena, to which you would also be welcome if you came there in February or March.

"My indulgent friends are apt to give me some little credit for the Forest Preserve which has been established in Cook County. I carried the legislation through, which resulted in a bill in 1913, and I have had a more or less formal connection with the Forest Preserve Commissioners, and have done my little bit toward purchasing 35,000 acres of forest contingent to Chicago. In politics I am a radical. I believe in public ownership of natural utilities. You ask if Chicago has improved since 1903. It really has, but not in accordance with our newspapers, which will give you the idea that this is the center of crime."

Miss Marion Talbot, Professor of Sanitary Science and Dean of Women at the University of Chicago for 33 years, writes very interestingly. Her remarks in regard to obtaining her diploma at Technology throw a new light on the helpful character of General Francis A. Walker, our Technology President. She says: "Since retiring in 1925 from the faculty of the University of Chicago, I have been asked more than once if I was not 'glad to be free.' I have always answered, with some petulance, I fear, that I had always been free to do the thing which I most enjoyed and thought most worth while; otherwise I would never have continued to hold my position and help build up the institution which is now one of the leaders in American scholarship and education. Since retiring I have served as Acting-President of the Constantinople Woman's College during the absence of the President and then had an opportunity to see and appreciate the efforts of the Near East peoples to free themselves from their ancient bondage under Christian and Mahomedan alike. On my return from Turkey I began in collaboration with Mrs. Rosenberry to write the history of the American Association of University Women which will be published by Houghton, Mifflin Company in April at the time of the semi-centennial meeting in Boston. The Association, organized and known for many years as the Association of Collegiate Alumnae, was suggested in 1881 by my mother, Mrs. Emily Talbot, at a time when few women ventured or were permitted within college walls. While serving as its first Secretary, I carried on studies at M. I. T. On the street car one day President Walker who was a personal friend asked why I didn't graduate. I told him that I already had two degrees from Boston University and did not want to be compelled to take up studies which were not connected with the work I was doing

under the direction of Mrs. Ellen H. Richards in Dr. Drown's laboratory. His reply was 'the faculty will not be stupid about accepting equivalents,' and at the next Commencement I graduated. Many a time since I have been proud to say that I had a M. I. T. degree."

Billy Dearborn wrote from Havana, Cuba, in January saying that he expected to leave Cuba the latter part of that month and after spending the balance of the winter in Florida he hoped about May 1 to return to Sandwich, Mass., for the rest of his days. We all are glad to hear this as it means we shall see Billy at our class reunions in the future. He has been in Cuba most of the time for the last 15 years, the last five of which he has represented Warren Brothers Company in connection with the construction of the Central Highway of Cuba which has just been completed. The Company contract on this highway amounted to about \$70,000,000.

Fred Nichols of Chicago is celebrating his "Sabbatical Year" by making an auto trip with Mrs. Nichols, around the perimeter of the United States. They started December 30, 1930, for Miami, Fla., via Chattanooga, Tenn., and Charleston, S. C. After spending the balance of January in Florida, they plan to spend February in New Orleans; March in Texas; April in Los Angeles; May in San Francisco; June in Vancouver, B. C.; July in Denver; August in Winnipeg; September in Nova Scotia; October in Boston; November in New York, and December in Washington. Fred has been provided with a list of 22 men in our class who live in cities through which he expects to pass so that he can round them up for our Forty-Fifth and Fiftieth Reunions. At this point in writing these notes (10 p.m., February 24), your Secretary's door bell rang and he received a special delivery air mail letter from Fred dated February 22, Fort Myers, Fla. Fred had been worried that 11 p.m., February 24, was the "dead line" for April notes and by using the "air" and a special messenger he came "under the wire" just one hour ahead of time. Pretty close figuring on Fred's part, you will agree. As Fred's letter contains over 3,000 words we will be obliged to give you only a few excerpts taken almost at random as follows: "Our little apartment is just off the boulevard which leads out by Edison's and Ford's places on the river front. Here the Caloosahatchee River is over a mile wide and in sight from our porch; Edison dedicated the new bridge on February 11. We were there and saw the whole thing much more readily than we see parades at home and far more successfully. . . . The first day here it was 79 degrees, the warmest we have had. We thought it was heavenly, but it didn't last. . . . Miami, our next stop, will be warmer. We shall hang around there only a week or so, then a couple of days in Cuba and back to Tampa, New Orleans, Texas, and California. . . . To return to Nashville, Tenn., for a moment, we visited the 'Hermitage,' Jackson's old home. Truly it represents the old stately

southern mansion, most of it just as in the original days. . . . At Asheville, N. C., we saw a \$10,000,000 Rayon silk plant. Spruce wood is brought from Canada and made into Rayon. The pure water there is indispensable. Dutch capital is back of it. They use local help entirely. . . . One street in St. Augustine was less than six of my feet in width. . . . We find echoes all over of the bank failures. Here many empty stores give mute evidence of the collapse of the boom in 1925, and it isn't all over yet. . . . Another thing I forgot. At St. Augustine I went out to the links to see a local tournament. Imagine my surprise to see a sign saying Johnnie Farrell, open champion a few years ago, was the professional there. His assistant informed me that Johnnie at that minute was on his way around the course with Helen Hicks and his brother Jimmie Farrell and Madden of New York. I immediately developed a new desire. I found them at the tenth hole. My! but how they *all* could drive! The gallery varied from five to ten in number. Was I fortunate?"

Our longest distance classmate Joseph Cooke Smith writes that he has changed his residence from Champéry, Valais to Clarens, Vaud, Switzerland. We are sorry to hear that he has been so crippled by neuralgia in the back for the last nine months that writing is a great effort. We all remember his service during the war when he worked two years for the French Red Cross and was with the Duryea War Relief Committee in the war zone.

Luther Dean of Taunton, Mass., practiced civil engineering for more than 30 years, up to 1919, having charge of construction of a number of electric railways in Massachusetts, New York, California, and Texas. Since 1919 he has had an office in Taunton as a dealer in investment securities, specializing in public utility bonds. We hope Dean will come around to our class dinners and reunions for he will be sure to find some of his old "civil" friends as well as some who have graduated into the bond business.

All of you doubtless remember Edward P. Quigley, the rollicking son of the sunny south who pranced and danced his way through many a round in the old Exeter Street Gymnasium with his boxing gloves beating a merry tattoo on his opponent's anatomy. He says he has replaced boxing with golf and quail shooting. We will let him tell his story in his own inimitable way. "It was quite a treat to receive your circular to the boys of old '88 with a special personal greeting reminiscent of the old associations of our long bygone class days. It is needless to say that the gloves I wore as a featherweight in my freshman year have never been replaced in many, many long years.

"I do play golf occasionally — only an ordinary dub — on the Highland Park links which are right back of my residence out on Cliff Road, Mountain Terrace. I face the famous Red Mountain Range from which our reputation as the country's greatest red ore district is drawn — while my rear view takes in

1888 Continued

the links which have been described as one of the most picturesque in the country. My other diversion is in following a good pair of setters or pointers quail shooting, which I enjoy several times during the open season in Alabama, November 20 to February 20.

"As noted at top of sheet I have been engaged as a corporation (mining companies) title examiner; and this has been my life's work. My office has been on the 14th floor of this building for the past 18 years.

"I know you will make a worthy successor of our lamented Snow, who so long, faithfully, and lovingly served as our Class Society Secretary. I grew genuinely fond of Snow through such association, and always called upon him when passing through Boston on my eastern summer trips. Though I'm tardy in such expressions, I was genuinely grieved to learn of his death; and wish sincerely you would communicate such expressions to his son whom I noticed in *The Review* was recently married — and to Mrs. Snow and her daughters.

"I received an announcement a few months' ago of the marriage of Runkle's daughter to a minister who has charge out, I believe, in Pasadena, Calif. In acknowledging such remembrance I wrote 'Runk' 'twas hard to think of our jolly, rollicksome classmate being the sedate daddy-in-law of a sombre frocked sky pilot. I hope this time I can join the boys at the 1931 June Reunion."

Brigadier General Jesse F. Stevens, '88, Adjutant-General of Massachusetts for the past 12 years under Governor Coolidge, Cox, Fuller, and Allen passed out of office with Governor Allen the first of the year. — Neal O'Hara, writer of a daily sports column in the *Boston Traveler*, either read the '88 notes in the February *Review* or has other equally authentic source for his information for recently his column contained the following: "Technology had an intercollegiate championship football team in 1888, the year it beat Dartmouth 24 to 15." As the years fly by the more we realize the greatness of that football team and the best part of it was the fact that 7 of the 11 regular players on the team were '88 men. 'Rah for '88! — BERTRAND R. T. COLLINS, *Secretary*, 18 Athelstane Road, Newton Centre, Mass.

1890

In a January issue of the *Los Angeles Times* was a picture of our classmate, Dr. George Ellery Hale. George lives nearby in South Pasadena where he has conducted his research work since 1904. Largely because of his work, Southern California has become a scientific research center. He invented the Spectroheliogian for photographing solar prominences, and in his book, "The New Heaven," gave mankind new conceptions of the universe. — George Packard has evidently been in Los Angeles recently on some of his mining trips as he sent us a copy of the *Los Angeles Times* with a picture of George Hale in it and an account of the wonderful research work he has done.

On December 29, Hayden, Stone and Company, of which our Charlie is senior member, moved to 75 Federal Street, Boston, after being located for 39 years at 87 Milk St. — Mr. and Mrs. Cabot J. Morse are reported to be at the Bon Air-Vanderbilt in Augusta, Georgia. — Your Secretary and Mrs. Gilmore plan to arrive at Forest Hills, Ricker Hotel, Augusta, Georgia, early in March. If any of the rest of you are down in that direction, he will be ready to tackle you at golf.

Darragh and Mrs. deLancey arrived home from abroad in November, having seen the Passion Play, and motored some three thousand miles through Germany and France. What his plans are for the summer, we have not yet been advised. — At the Alumni Dinner held in New York in December, '90 was represented by: Miss Maltby, Norman and Mrs. Nims, Calvin and Mrs. Rice, and Billy Poland.

Among those who sent message of congratulation to Mr. George Eastman, at the banquet in New York given to him on February 9 at the Commodore, on the Golden Jubilee of the first patent issued to him on cameras, was one from our classmates, Pierre S. du Pont.

We were glad to learn that Billy Poland is back in the United States again. He is with the Bancamerica-Blair Corp. of 44 Wall St., New York City. From what reports we have been able to obtain, his home address is 164 East 72d St. — Your Secretary has written a letter to Billy, but is still awaiting reply. Hope to hear soon. — Winthrop Coffin's home address is 45 Warren St., Brookline, Mass.

In a newspaper of February 11 the following item appeared: Professor William Z. Ripley of Harvard University, noted railroad transportation authority, flew to Hartford, Conn., this afternoon as a passenger on the southbound Colonial Air Transport trimotor plane, which left the Boston Airport at 12:30. Professor Ripley, who has done considerable airplane traveling, made the trip to Hartford to keep a speaking engagement with the Hartford Traffic Club this evening. He expects to return to Boston by train after his address. — Billy Ripley was apparently at Winter Park, Florida. Whether for a long or a short stay we do not know, but on January 8, Billy gave a talk there urging laws to restrict busses and that railroads need aid as a curb on rivals. He praised President Hoover for the four-party trunk line plans.

Almon E. Norris, '89, passed away at his home in Brookline, January 15. Al was a prominent mechanical engineer and had been connected with the Mead-Morrison Manufacturing Company for 35 years. He had been chief engineer of this company for 26 years. During his career he designed and invented many useful machines; and as a designer he was known throughout the United States. He took high rank among mechanical engineers of labor-saving machinery, and many of the machines he designed are widely used. When he became connected with the Mead-Morrison Company, coal and ore were then being handled in units

of one-ton. At the time of his death it was being handled in units of from ten to 30 tons. In 1900, the storage of 50,000 tons of ore or coal was a large amount. Today, many a storage runs from 1,000,000 to 1,500,000 or more tons. All of this development took place under the eye of Mr. Norris.

We regret to announce the death of our classmate, Dr. Knight C. Richmond, of Providence, R. I. Knight passed away on December 22.

Calvin Rice has just advised us that Dr. Margaret E. Maltby, associate professor of physics at Barnard College, will retire at the end of the school year. She is now on the *Franconia* tour, breaking the journey at Japan about April where she will make a short stay. She left in January and is due back in New York the last of May.

A letter of February 23 from Albert F. Brown advises us that he is at the end of his third week in Baltimore where he will probably remain until into April before returning to Providence. He is staying at the Arundel Hotel. Albert sends us a picture from the press showing our Billy Ripley sitting on a post just before entering a plane for Washington. Albert wonders if the post on which Billy is resting his hands represents plans for railway consolidations for the Interstate Commission or a Ph.D. from some university. — GEORGE L. GILMORE, *Secretary*, 57 Hancock Street, Lexington, Mass.

1895

The Thirty-Sixth Reunion of the Class of '95, held in New York City under the auspices of the New York members on January 24 and 25, has passed into history. There is a bit of controversy as to the correct numbering of this reunion, but since your Secretary is the sole arbiter, it is accordingly so decreed. It is truly the Thirty-Sixth as its inception was the aftermath of the remarkably good time everyone had who attended our regular five-year reunion at Plymouth, Mass., last June.

Much can be said about our reunions, for all have been so notably successful that those who can possibly attend always do so, yet each one had a joyous sprinkling of good fellowship strictly its own. It is generally conceded that '95 has its reunions just the way they want them, and the gathering at the Gramatan Hotel in Bronxville, N. Y., was typical.

John H. Gardiner, our efficient Assistant Secretary, who is located in the Graybar Building, N. Y., mailed notices to some 40 class members residing within 100 miles of New York City. Fred Cutter, the New York Secretary, corralled the New York men, while Yoder handled the Boston prospects. When the roll was called at the Gramatan on Saturday afternoon, January 24, 29 answered. Those attending were: Mr. and Mrs. Thomas B. Booth, Mr. and Mrs. Henry D. Jackson, and Mr. and Mrs. Luther K. Yoder, all from Boston; Mr. and Mrs. John H. Gregory from Baltimore, Md.; Mr. and Mrs. Edwin C. Alden from Hartford, Conn.; Mr. and Mrs. Arthur

1895 Continued

L. Canfield from Somerville, N. J.; Sidney K. Clapp from Kingston, N. Y.; Azel Ames, Fred B. Cutter, William B. Claflin, Mr. and Mrs. Ben Donham, Mr. and Mrs. Albert W. Drake, Mr. and Mrs. John H. Gardiner, Edward H. Huxley, Mr. and Mrs. John J. Moore, Franklin A. Park, Mr. and Mrs. Frank C. Schmitz, and Thomas H. Wiggin, all from New York City. Mrs. Huxley was called to Wisconsin on account of the death of her mother, Gerard Swope was in California, and the Wolfe's were absent due to business engagements and their regrets were recorded.

The program was informally arranged and since all were members of the reception committee the reunion started off with a bang. The rambling halls of the hotel added much to the comfort of all and proved to be a most suitable place for such an occasion. Dinner was served at seven o'clock and for three hours we refreshed together and enjoyed the intimacy of cherished old friendships. Gardiner was generalissimo and under his clever guidance everyone entered heartily into the plans of the evening. It was soon discovered that Ned Huxley much enjoyed the canapé, and as to the terrapin, it was delicious; write to Ned about it. The dinner was most excellently arranged, deliciously cooked, and delightfully served.

Following dinner, we had the treat of the evening in the form of a ten-minute sketch entitled "Al Smith's and Johnny Raskob's Interest in Technology." The sketch covered an interview of a New York World reporter with these two gentlemen. Fred Cutter impersonated Mr. Raskob and Johnny Moore took the part of Mr. Smith. Ned Huxley was the reporter.

If you remember Fred Cutter you will recall that his profile is the truest likeness of Mr. Raskob, and as for Johnny Moore, he is the perfect image of Mr. Smith, especially as he was attired in the proverbial brown derby. Johnny hunted New York City for two days until he secured the perfect model of the brown derby. It was simply a scream. To fully appreciate it you should have been there. Ned Huxley, as the reporter, played his part well and contributed considerable weight to the cast. Henry Jackson, our official movie man, gave a screen exhibition of the movies of 1895 taken at the June reunion. This reel gave a splendid exhibit of our antics at both Swampscott and Plymouth. The film will be copied for our official '95 collection. Jackson also showed the film collected by the Yoders on their Jamaica trip last March. The show was very much enjoyed and Henry deserves a special vote of thanks for this splendid performance. The remaining part of the night was enjoyed with the dancers in the blue room of the Gramatan.

Sunday morning saw everyone refreshing in groups at breakfast. Following breakfast, Jackson took a movie picture of the entire class perambulating over the lawn of the hotel. The actors of the previous night were especially filmed.

This film will also be added to our collection. Gradually, the ranks thinned out during the day and by nightfall another delightful gathering of the '95 clan was a thing of the past, yet long to be remembered.

Walter Marmon of Indianapolis, Ind., was found registered at the Hotel Roosevelt but could not attend the reunion on account of a call to Philadelphia. Walter missed a good time and he is sure of it. Frank A. Bourne and Mrs. Bourne sailed on the *Republic* from Philadelphia on January 28 for a cruise of the West Indies. — William E. Swift has moved from Canaan, Conn., to Cornwall, Conn. — Gerard Swope was in Pittsburgh, Pa., on February 26 to attend the luncheon of the Pittsburgh Chamber of Commerce and the Engineer's Society of Western Pennsylvania Annual Banquet.

Our official Class Representative on the Council of the Alumni Association is Henry D. Jackson of Newton Centre, Mass., and we assure you he is on the job and we are all well cared for. — Dr. S. Lawrence Bigelow, Professor of Chemistry at the University of Michigan, announces the engagement of his daughter Miss Anne Harrison Bigelow to Daniel Garrison Brinton Thompson '23, of New York. — Your Secretary has a most interesting article on Gene Clapp's golf proclivities, and every '95 man should watch for it in the May Review. We like to collect the good things about '95 men and this is real good; you will get it later. — LUTHER K. YODER, *Secretary*, Chandler Machine Co., Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, Graybar Electric Company, Graybar Building, New York, N. Y.

1896

The first bulletin on the Reunion at Osterville, Mass., June 18 to 21 inclusive, in celebration of our Thirty-Fifth Anniversary, went out in the mail the first week in March.

Walter Stearns has gotten busy in lining up the rest of the old '96 quartette of Edgar Barker, Marshall Leighton and Con Young, so that they may have their voices properly oiled up for the occasion. Arthur Baldwin has written from Paris that he will be with us in spirit, but is not sure that he can make his annual trip to America coincide with our Reunion date, so that he may have to be counted among the absentees. He hopes still that he may be present, however, and states that he has come to appreciate what a great pleasure and satisfaction it is to attend the none too frequent gatherings. He has an idea that as the boys get older something of the same feeling is borne in on them all, and that the proportion of the living classmates who show up at these meetings is continually an increasing one, which will reach 100% when the last survivor holds a reunion all by himself. Louis Morse likewise is confronted with a dilemma, because of the graduation of his son, which comes about a fortnight earlier at Technology. He cannot quite see his way clear to make two trips to Massachusetts from Pennsylvania, and he

THE TECHNOLOGY REVIEW

is fearful that his ice business will suffer if he is away for too long a period. Meyer Sturm says that he will surely be here in June if he can get someone to look after his garden in Evanston, Ill., at the time of the Reunion. He was in Boston for a very hurried trip at the beginning of February, having had a sudden call on account of the death of Mrs. Sturm's mother.

John Willis took his pen in hand to write the Secretary early in February and express himself of the strong personal conviction that *The Technology Review* was getting to be one of the most interesting magazines published in America or anywhere. He failed to state whether or not he would be here in June. It is suggested that the Chicago readers of these notes, such as Meyer, Sturm and Joe Harrington, should get to work on Willis at once and convince him of the desirability of showing up at the Reunion.

Pierre E. Richards was reported lost by the Alumni office, but a little sleuthing on the part of the Secretary has relocated him. He is sales representative, Colgate-Palmolive-Peet Limited, London, and his home address is 95 Piccadilly, London W.1, England, but apparently he has something to do with the French office, as his letter was written from the French headquarters, 20 rue Vernier, Paris. Probably Arthur Baldwin and Reg Norris, who are in Paris, will want to look up Richards at this address.

In the Boston papers appeared an obituary of Mrs. Phoebe Ann Fuller, whose death occurred in Brockton on February 4. She was 81 years old, and the widow of Albert H. Fuller, the founder of the Brockton "Enterprise," but the interesting feature for '96 men is that she was the mother of our Myron L. Fuller of Brockton and elsewhere.

One of the jobs which pertains to the office of Alumni Secretary is that of visiting local clubs, and on a trip to Fall River on February 22, your Class Secretary saw for the first time in over 35 years Tommy McGlynn, whose head of hair still remains substantial in amount, and whose features still resemble those of the boy who was in our freshman class at Technology. We had an all too short time for reminiscing, but parted with the promise that we would plan to get together again in the near future. He remembered and inquired for a number of the old classmates. — Louis Marble came through with a letter from Cleveland the last of January, but confessed at the outset that he had nothing in the way of news. He had given up his work with the Colonial Iron Works Company in Cleveland, and was resting on his oars, with ample time to draw his breath.

Louis Morse is the latest victim reported of the swindler, who approached him with the representation that he was the son of Henry Waterman of Yarmouth, N. S. The same old story of the automobile accident was told, and he was a dental student at the University of Michigan and was very anxious to get back. The fellow was so plausible, and made such a fine appearance, that Louis

1896 Continued

fell for his story in just the same way that a number of other fellows have fallen. — The last word is that you fellows who have not replied to your Reunion questionnaire should do so without delay. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1898

We had quite a pow-wow with Carleton Koch on February 12 in Boston where he had been visiting some metallurgical convention. He began by complaining of the scarcity of news about '98 in these notes. We mention this as an encouraging sign that classmates do look for these notes and that it may be worth while to write up the little information that trickles in. Koch talked about everything except himself. He talked of Bill Fownes and Harrison Nesbit, men we do not often hear about. Both are influential men in Pittsburgh. Fownes is very sick at present at Asheville, N. C., as we mentioned recently. Nesbit is a prominent banker.

Koch held himself up as one of the youthful ones of our class. Where so many are now grandfathers, he has a boy of eleven. We talked of the steel casting business — of course it is remembered that he is President and General Manager of the Fort Pitt Steel Casting Company of McKeesport, Pa. New problems are coming up in this line every day in connection with the casting of the alloy steels, like stainless steel, the chromium nickel iron alloy, and so on. — ARTHUR A. BLANCHARD, *Secretary*, Room 4-160, M. I. T., Cambridge, Mass.

1899

Frederick Waddell wrote me in January that he was serving a short sentence in bed under the doctor's orders. We regret his indisposition, but his hardship was our gain for he took the time to give a bit of news of himself and his family as well as his friends. Waddell's son is scaling the heights and depths of chemical engineering at Tufts College. He is scheduled for M. I. T. later on. A note from Woollett in Sacramento informed Waddell that he has abandoned for the time being the doldrums of architecture for the trade winds of insurance.

In the same mail I received word that Dwight Farnum is living at 1979 Estrella Avenue, Los Angeles, Calif. He followed the mining industry several years after leaving Technology, specializing in mill construction and management, but finally went to California to settle an estate, which ultimately caused him to engage in the sub-division of a tract of land which he had acquired. Occasionally he dips back into mining, as for example in 1924, when he was at Lake City, Colorado, and made a few examinations of mining prospects in Arizona and California. Farnum states that real estate business is rather quiet on the West Coast this winter, but he expects a return to normal conditions next year which will create a more active demand for his

land, and enable him to carry out his hope of building a permanent home in one of the beautiful small cities of Southern California.

Frederick Watkins writes from Chicago that he cannot get to the June Reunion because one of his daughters is graduating from Wellesley and another from Gulf Park College in Mississippi and it will keep him stepping to be present at both occasions. — Charlie Corbett, who is now advertising director of *Needlecraft*, wrote me that Lew Emery gave a recital at Steinway Hall, New York City, Monday evening, February 2. Lew told me he was going to have a recital, but it took a friend to tell us that it went off well.

Gardner Barry reports a triumph over noisy neighbors that will be a delight to apartment dwellers. After many days he has succeeded in getting the telephone moved from the party wall separating his apartment from the adjoining one, and the noisy tenants had to pay the moving charges. This may be the seed from which mighty benefits flow.

For light reading I commend to all a recent masterpiece written by Albert F. Nathan entitled, "Brief for Coley" Appeal from the Board of Appeals, United States Court of Customs and Patent Appeals. Coley, a client of Nathan's, had a case which finally reached the Court of Appeals in Washington after seven years, and it fell to Nathan's lot to write a brief on a metallurgical subject which the Court could digest. Nathan won the case. After reading the brief, I know why.

It is with regret that I report the death of Herbert Starr at Germantown, Pa., on Thursday, February 18. — W. MALCOLM CORSE, *Secretary*, 810 18th Street, Washington, D. C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

1900

Fred Everett and his son are again in print as per the notice in the *Conway Reporter* as follows: "The editor of The Reporter wishes to say that while he has nothing to do regarding the writeups of the hockey games at North Conway, he does want to compliment the team in its great games last Saturday night and Sunday afternoon. The North Conway team had for its opponent the star team of New Hampshire, one from Concord. Among the interested of the visiting team's fans were Mr. Frederic Everett, highway commissioner for New Hampshire, whose son, Doug, was one of the star players, and John F. Griffin, motor commissioner for New Hampshire, and some of their friends. These distinguished visitors were very enthusiastic in their approval of the manner of men which comprise the North Conway team and the way they played, and the visiting team were equally as appreciative when they said, 'The North Conway Hockey team was one of the snappiest they had run up against this year.' Mr. Everett and Mr. Griffin also had an opportunity to see how wonderfully our roads are plowed.

As an example to the boys of both teams, neither of these gentlemen forgot that on Sunday morning there were services in our churches, as both Mr. Everett and friends along with Mr. Griffin and his friends were found at the churches of their denomination."

Brigham is to be complimented on the showing made lately by his son Lindsey, who is captain of the Brookline High School track team this year. Ye scribe, acting as an official at the boys' games in the arena under the auspices of the B. A. A., recently had a good chance to observe his finishes in the distance runs. At several other schoolboy games Lindsey has given a good account of himself and a brilliant future is predicted.

Harry Grant kindly sends the following: "The two outstanding events on our trip to Italy were an audience with the Pope in Rome and a fairly close contact with Mussolini in France. We were tremendously impressed with both of these men and it may interest some of the class to hear just what an interview with the Pope is like. These interviews occur daily, occupy nearly two hours and include each day approximately 2,000 people from all corners of the globe. The following is from my diary: 'To the Vatican at 12 o'clock noon, Mrs. Grant wearing required long black dress, neck and arms fully covered and black scarf over her head. Myself in dinner suit and white tie. Past brilliantly uniformed Swiss guards. Presented letter of admission and were ushered into large and beautiful reception room in which were standing some 300 others. We were immediately advanced by a Vatican attendant dressed in rose red damask upholstery cloth with sort of wide bell cords hanging from each shoulder. Were ushered through four impressive rooms, each containing about ten brilliantly uniformed Vatican guards and attendants and from 100 to 200 pilgrims like ourselves. We finally landed up in a red rose room with throne of red and gold. Here some 50 of us lined up, in single file, around the edge of a red tapestry carpet. After waiting about half an hour, we were asked to kneel and immediately the Pope appeared. He is a splendid looking man with a kindly face. Said to be about 73 years of age, but doesn't look it. He was accompanied by 10 or 12 high military officers, secretaries and Catholic dignitaries. The Pope was dressed in a white wool cassock with wide, white silk sash, white skull cap and red Turkish slippers. He passed from person to person, pronounced a brief blessing over the head of each and extended his ring (a large pale blue sapphire) to each to be kissed. After finishing with all in our room he gave a short benediction or blessing in Italian and passed on to the next room. It is difficult to express the spirit of this ceremony in writing. It leaves a lasting impression on all who experience it, whether Catholic or not, we being tolerable Episcopalians. I counsel that Americans going to Rome should arrange through the Catholic Bishop in their home location or through

1900 Continued

the American Consulate in Rome for an audience with the Pope." — C. BURTON COTTING, *Secretary*, 111 Devonshire, Boston, Mass.

1901

Since writing you last I have received from Loring Danforth a brief *curriculum vitae* of our classmate, Ralph Plumb, whose untimely death was noted last month. Ralph was born in July, 1876, and died on January 3, 1931. Arteriosclerosis was given as the cause of death, the condition probably resulting from the overactivity of his busy and useful life. For some years he had been President of the Buffalo Bolt Company and was very active in national trade affairs, having been on the Executive Committee of the National Nut, Bolt and Rivet Manufacturers Association. During the war Ralph was commissioned as Major in the Ordnance Department and rendered a distinguished service overseas. He was decorated by the French government and received a personal letter of commendation from General Pershing, the commanding officer of the A. E. F. He is survived by Mrs. Plumb, whose maiden name was Julia Carey, and by two children, Mrs. Gibson Gardner, and Ralph Hudson Plumb. With his genial personality, social gifts, and broad interests, he was a significant and loved figure in the community where he dwelt. His death was a heavy blow to his friends and associates, among whom must be numbered the members of the Class of 1901.

Arthur Hayden has been doing some remarkable things with bridges. With his associates he has made "a notable contribution to the engineering profession." (I am not quoting Arthur.) The new type of bridge uses the skew-arch, and by the solution of the intricate mathematics involved it is now possible to adapt arch construction to the requirements of the new high speed era of motor transportation. "Skew-arched bridges have been built for many years, but always on a wrong assumption. There were many serious failures and considerable loss of life owing to collapses resulting from an improper knowledge of the subject. The safety factor was always questionable. Now we can build skew-arch bridges and know that we are right." For reasons which need not be specified it is hoped to install this type of construction on all thoroughfares leading to and from Oyster Harbors before June.

Speaking of which, there would seem to be many in the Class who have overlooked the fact that the Thirtieth Reunion comes early in June of the current year and that we are planning to celebrate at Oyster Harbors, a Club situated on the South Shore. I say, seem to have overlooked the fact, as a letter bearing the glad tidings was sent to every member of the Class only one of which has been returned because of incorrect address. And while I realize that many of my erstwhile classmates have acquired permanent writer's cramp from signing checks and the other operations of high

finance, I feel that none of them would be too fatigued to affix his mark to the post card indicating his decision as to attendance were his attention really called to it. As there are still many to be heard from I can only infer that anxiety over the possible extra session of Congress, doubt as to the results of the Child Welfare Conference, anguished uncertainty over the ultimate disposition of the Eighteenth Amendment has for the moment, at least, distracted their attention from the really moving question of today. A post card will be issued in the near future both as a reminder and to permit an individual economy to the extent of two copper pennies. All of which is said without bitterness, only a wistful longing.

In the meantime we are on the eve of another debacle, the annual Alumni Dinner. For some years past Charlie Bittinger and your Secretary were what might be called the foundation stones of representation at this solemn orgy; though last year several more, probably enticed by the bourgeois splendors of the Hotel Statler, ventured to participate. On the other hand Charlie failed me, for what reason I cannot at present say though I imagine there is a record in one of the government offices in Washington. Tom Desmond, the present President of the Alumni Association, is planning another innovation. My first reaction to it is that he has been in correspondence with the genial host of Oyster Harbors, though it is naturally possible that the plan has another genesis. In any case this year we are to entertain the ladies and when all have been satiated with the more material pleasures of existence, exercise in the form of dancing will aid the processes of digestion. In spite of the superb stand taken by the Class on the question of the Reunion I feel sure that this program, lasting as it does but a few hours, will not prove a serious deterrent to attendance. After all, public association with what friend Hunter jocularly designates as "sweethearts and wives" — the plural is Fred's — need not be a heavy burden. In my next letter I shall have the privilege of telling you how it all worked out. And I am hopeful, even though past experience lays a heavy burden on optimism. And the Terpsichorean exploits of some of the elect will be well worth seeing and better worth recounting.

Let my epilogue be to implore you to return the post card, that you will shortly receive, legibly and intelligibly inscribed. I trust you will not find this an unreasonable request. — ALLAN W. ROWE, *Secretary*, 4 Newbury Street, Boston, Mass.

1904

Under the will of the late Harvey G. Woodward '88, of Birmingham, Ala., his entire estate, conservatively estimated at \$7,500,000 was left to an educational foundation which contemplates the establishment of a series of "progressive" schools in Alabama. These schools are for the education of boys and Mr. Woodward's will elaborates at great

length on the details of the schools he had in mind. They constitute a radical departure from the present accepted method of instruction. The schools are not in any of their parts to become preparatory schools and are not to be or become colleges or universities, trade or technical schools and the purpose is to educate the average boy for the specific but broad purpose of making of him a better rounded man than usually results from so-called specific education.

The management of the fund is left to a board of governors consisting of seven members appointed for terms of from three to nine years. The member of this board of governors appointed for the term of seven years is our classmate, Oscar G. Thurlow. These schools Mr. Woodward himself recognizes as an experiment and his will provides that if after 25 years the board of governors regard them as a failure, the board shall liquidate the property and turn half of the fund so derived over to the Massachusetts Institute of Technology as a fund to be used exclusively for educational purposes and the other half to be held in trust by the board and the entire net income of this half of the estate made available for advancement of persons under 25 years of age who are in need of financial assistance in completing their education.

Mert Emerson contributes the following two items. "A letter from Selskar M. Gunn, Vice-President of the Rockefeller Foundation, written from the Paris office at 20 Rue de la Baume on December 22, says that he was in New York for a few weeks this autumn but did not have an opportunity to get to Boston. A letter from Austin Y. Hoy, dated December 23, announces the formation of Austin Hoy and Company, Ltd., Engineers and Merchants of Bush House, London. Until the formation of this Company, Hoy for many years has been the London manager for the Sullivan Machine Company."

A short time ago I attended a Chamber of Commerce luncheon with Mert Emerson and Gene Russell where we met Hump Haley. After the luncheon we paid a visit to Dan Comstock whose offices are in the Chamber of Commerce Building. Dan was not "in conference" but was out of town so we did not see him. We did, however, learn that Dan is now the proud father of another son, Charles Barton Comstock, who was born on September 25, 1930. I regret that I should be so late in announcing this arrival but Dan did not notify me of it and as I am not a habitual reader of the birth column of the newspapers it escaped my notice.

Professor Locke has sent me the following item regarding Roy Dimock. "A letter from Roy E. Dimock reports that in the early spring of 1928 he was in the hospital for an operation; and following that he and Mrs. Dimock were obliged to buy the property adjoining their own in Sidney, Nova Scotia, in order to get rid of a nuisance. Having acquired this property, it offered the opportunity for light work while Dimock was recuperat-

1904 Continued

ing. In August 1930 he went back with the steel plant at Sidney, Nova Scotia, in their metallurgical department, where he is finding many interesting problems.

"In December, 1930, unfortunately he had to return to the hospital for three weeks for an additional operation, but the last word from him was that he was getting back on the job, and was feeling optimistic that this second operation had successfully removed all possible trouble. He expressed hope that any friends and classmates passing through Sidney, Nova Scotia, would not fail to look him up."

In the rotogravure section of the Boston Sunday *Herald* of February 8, there was a very clear picture of the steamship *City of Los Angeles*, with a tri-motored airplane flying above it. The descriptive matter accompanying the picture is as follows: "The first attempt to transfer mail from an airplane to a steamship at sea on the Pacific proved both a failure and a success. The plane, piloted by Earle L. Ovington, dropped the mail bag over the *City of Los Angeles*, Honolulu bound, but the bag fell into the ocean. Since it was a new sort of waterproof, floating bag, it was recovered and the attempt was declared a success. Perhaps the flier's aim will be better next time." Of course we all know "Volts" is always trying something new and has been the pioneer in many lines. I assume had he tried to hit the *City of Los Angeles* itself instead of its namesake, the boat, he would have succeeded 100%.

A letter from Charlie Haynes states that he is still with the United States Rubber Company and is now located at the head offices of the company at 1790 Broadway, New York, in charge of the purchasing of chemical and allied materials. He says he has been there since last August and asks how he can get in touch with other '04 men in the vicinity, not having seen a classmate since last June. I sent him a list of the addresses of the '04 men in New York City and vicinity, and I am sure that Charlie would be very much pleased to receive a call from anyone who reads these notes when in his vicinity.

A clipping from the St. Paul *Pioneer Press* of Sunday, November 30, 1930, contains a very good newspaper picture of Bernie Blum and gives the following short history of his connection with the Northern Pacific Railway. "After graduating from the Massachusetts Institute of Technology in 1904, and serving as an assistant instructor there for a year, Bernard Blum returned to his native city of Chicago and became a rodman for the Chicago Junction Railway.

"From 1905 until 1907 he was rodman, draftsman, inspector, and assistant engineer on maintenance and construction. He entered the service of the Northern Pacific as an assistant engineer on March 1, 1907. He has served as district roadmaster, district engineer, and engineer of maintenance of way. Mr. Blum is now the chief engineer of the Northern Pacific, having held that position since August, 1928."

Among the classmates to whom Mert Emerson wrote announcing his connection with United Engineers and Constructors was George Curtis and George's answer to Mert's letter is worth reproducing here. "Glad to hear from you! The old signature looks familiar, suggesting not the least tremor — an evidence of good condition in early middle life. Evidently there have been a goodly number of consolidations and reconsolidations in arriving at the United Engineers and Constructors. Sit on them tight, Mert, so as to prevent the dissipation of their energies in further combinations.

"Inspected the North Station on Tuesday night and incidentally saw the Bruins trim Montreal 2-1 in hockey; also inspected the Statler that night. I can testify that the construction by the U. E. & C. was good in both cases. Incidentally I saw Dick Hartshorne at the City Club luncheon on Monday last. He holds his good looks well.

"In answer to your question 'How are you?' I enclose a clipping indicative of some of my activities here at the 'crossroads.' The account is colored somewhat as I am in my 50th year but shall not actually arrive until June 17 next. I weigh exactly the same as in 1904 although lacking in some of my hirsute adornment. Glad to hear of Don and that he has been so successful. It would be nice to see all of the old gang once more. Do you know what became of Hill? I think I have not heard of him since '04. Thanks for your letter, Mert, and good luck!"

The newspaper clippings to which George refers in his letter cover an athletic meet held in Pittsfield on October 13, 1930, and the better of the two is given here. "Fifty years ago either by daylight saving or standard time, George Curtis of this city fell from his crib to the floor or possibly jumped from the floor to the crib. We would not go so far as to say that he was doing some pole vaulting when Christopher Columbus found enough wind to land but we do know that half a century is a long time even in these days of swift living. At any rate, hearing so much talk about Columbus, George decided to spend the holiday in some other manner than sleeping. He dusted off his spikes and track uniform similar to those he wore as a representative of the Massachusetts Institute of Technology and competed in the meet at Wahconah park.

"In the pole vault George led the field as he cleared 10 feet and then he did even better in an exhibition to show that the youths in that competition could not match his best efforts. With a jump of 5 ft. 4 in. he finished third in the high jump, which shows that the pole served partly as a cane for the venerable athlete in winning the vault. To boys who think that at 25 they are too old to compete in athletics, George Curtis is a real object lesson. Never has he allowed himself to get out of condition, which explains why he at the age of two score and ten can do so very well in sports which are followed principally by school boys and college athletes."

To corroborate and amplify reports of George's athletic ability Ed Parker wrote me the following letter under date of February 8. "I thought you would be interested in hearing indirectly from our old friend George Curtis whom I just met on the street here in Pittsfield. I have had to spend Sunday here and felt as though I had done pretty well to take a three-mile walk with the thermometer not too far above zero, and then I met George. He at once invited me to go skiing with him this afternoon. The jump where he plans to display his old time athletic skill is one of 120 feet, but he said there is a shorter one of about 50 to 60 feet. To prove that he could negotiate these distances he showed me a snapshot of himself in mid-air, his athletic contour showing against the sky like one of these Dartmouth College boys now disporting themselves at their winter carnival. Moreover, he informed me that he won the pole vault here at a meet last October 12 and finished third in the high jump.

"Well, I really had a previous engagement for this afternoon and it is just as well. If George had had me dragging along it might have spoiled an athletic afternoon for him; however, I doubt it. I think nothing could dampen his youthful spirits which seem to be as active as back in the old days when he was winning points for Tech. More power to him."

I feel very well satisfied again with the amount of material that I have been able to get together for these notes and can only hope that the next issue will be equally prolific. — HENRY W. STEVENS, Secretary, 12 Garrison Street, Chestnut Hill, Mass. AMASA M. HOLCOMBE, Assistant Secretary, 3305 18th Street, N. W., Washington, D. C.

1905

Sam Shapira was wanted for a Class party in Boston but, without advance notice, he left for another spell in Russia. In January he wrote: "The important thing right now is to inform you that I am sailing from New York on February 4, eleven A.M. on S. S. *President Roosevelt* for Hamburg on my way to Russia for the third time. This time I expect to be gone for two years — so with the past three years in Russia it looks like I am to have a little 'Five Year Plan' of my own.

"There are a great number of American engineers in Russia today — probably 1,000 — and each man is doing his bit to help out the tremendous industrialization plan of the Soviets. I would guess that in the next year or two the number of American engineers will be largely increased. The field for their work is enormous and it all is a wonderful experience. There is apt to be for many, in Russia, lots of pioneering and some must, of necessity, put up with tough conditions at times, but any American engineer with any background and any degree of adaptability can make things go pretty decently and come out of the experience none the worse for it. A lot depends upon the man! I am returning for my third visit — that's my answer.

1905 Continued

My address in Russia is as follows: c/o Schactstroy, Katzarska 9, Kharkov, U.S.S.R."

Chester Shaw is with the United Shoe Machinery Corporation, 140 Federal Street, Boston, and seems to have been there a couple of years. — Harry Charlesworth was one of the chairmen of the tables at the M. I. T. Electrical Engineering Seminar in New York in January. The purpose was to give every alumnus a clearer picture of the situation at the Institute and the Institute staff a clearer picture of the situation in the field. — Through Roy Gale we learn that Ernest Harrah is living at the Guanabara House, Mt. Kisco, N. Y. — Logan Hill resigned last May from the Atlantic Coast Airways Corporation with which he had been for a couple of years, and at the last report was temporarily relaxing at his old home, Lincoln, Ill. His son, Logan Spaulding Gillett, was graduated from Yale with the Class of 1930. — Bill Motter and your Secretary attended the Motor Boat Show in New York. On the spotless decks of mahogany cruisers, they had a big "gam" on the hazards of Long Island Sound.

Last month we mentioned Edward Church Smith's History of Middlefield, Mass. Since then we have secured a copy and read it with a great deal of interest even though it was all about a little spot in western Massachusetts that we had never heard of. How Smith found time to discover and sort out all the facts and figures is a mystery, for there must have been a tremendous lot of work. Ed says that it took 20 years. James Truslow Adams, in a comprehensive review, says in part: "This is a history of a Massachusetts town that never had a population over 877. Owing, however, to the able manner in which it had been written, the book possesses considerable value for the historian in a wider field. . . . The point of interest for the historian is that here we have a carefully worked out analysis, from the economic and social standpoints, of a characteristic New England 'hill town' from its settlement to the present day."

Claude Anderson recently made a visit to Boston and wrote that he had not been there for two years and was always glad to get back. "My imagination is still hitting on all 16 and the 'good old days' are easily conjured up. Had wanted to at least see, if not have lunch with Henry Keith, Ed Burkhardt or some others, but was kept busy every minute of the four days. Called up Gib Tower but he was out and he later missed me. Did see Goldthwaite, more on business, however, as I was looking for the proper man or company to act as New England agents for us. Incidentally, for some time I have been Vice-President of the company and Eastern Sales Manager, but as you once said in a letter, the Class now has so many vice-presidents and other officers that they clutter up the place. It doesn't mean a thing. Even if I ever get to making \$1,800 a year, the one arm lunch rooms will never be too common to eat in. Two evenings of the time spent

in Boston were taken in entertaining the daughter at Simmons — it certainly reminded me of the fussing days at the N. E. Conservatory of Music and similar temples devoted to various arts."

We have had a telephone talk with Ted Steele who, as previously announced, is with the Columbia Engineering and Management Corporation, 61 Broadway, New York. He came East in November. We had hoped to lunch with him and get acquainted but something prevented his going that day. — On January 30, 14 of our class sat down to luncheon at the Technology Club of New York at the call of Bill Motter. The Twenty-Fifth Reunion film was the attraction and, believe it or not, was enjoyed immensely. Your Secretary was prevented at the last minute from being present as he had planned. The party included Charlesworth, Edmunds, Fouhy, Percy Hill, Hool, Landers, Lombard, Mead, Motter, Percival, Robbe, Shaw, Spalding, and Wilcox. — Bertrand Johnson, Associate Scientist, Rare Metals and Noumetals Division, Bureau of Mines, is the author of Information Circular 6385 on Nitrogen and its Compounds.

John Meggison writes from Riverton, Kansas: "I am still with the Empire District Electric Company. At present I have charge of switchboards and meters and controls connected therewith. On account of the business slump our load is not very heavy and the immediate future looks not much better. But the Company is keeping a-going and has an eye peeled for new business. Much of my spare time is given to religious work, the announcing of the Kingdom of God, and helping men get ready for it." For some years he was a minister with the International Bible Students Association with headquarters in Brooklyn, N. Y.

The following appeared in the *Schenectady Gazette*: "James P. Barnes, who left Schenectady in 1920 to become President of the Louisville Railway Company, Louisville, Ky., will not stand for reelection at the annual directors' meeting February 18, because 'the present dissension within the board of directors has produced a situation which is intolerable to me,' according to the current issue of the *Electric Railway Journal*."

"Mr. Barnes came to Schenectady in 1917 as general manager of the Schenectady Railroad Company, succeeding James F. Hamilton, who left at that time to head the New York State Railways. In announcing his resignation, Mr. Barnes states the financial and legal affairs of the Louisville company are in such a state as to protect the interests of those who invited him to go to Louisville and that until recently he has carried on the uphill fight to strengthen the company in conditions of harmony and co-operation. It is understood his resignation, effective February 18, carries with it the resignations of the company's officials, including the purchasing agent, treasurer, and general auditor."

"When Mr. Barnes became President in 1920, the company was paying no common dividends and was more than

\$300,000 in arrears on its cumulative preferred dividends. Since then earnings have paid all operating expenses and have been sufficient to pay \$7.00 per share of common stock. The total paid in dividends during his presidency amounted to \$2,959,152 and during the first nine years \$1,750,000 was set aside for depreciation reserve. In addition, the physical condition of the company and of the rolling stock has been improved."

"Three times during his presidency the company won nation-wide commendation for the safety of its operation and has three times received awards from the American Museum of Safety. Mr. Barnes has been active in railway associations and is a former President of the American Electric Railway Association. He is a graduate of Massachusetts Institute of Technology and has held managerial or engineering offices with the Oneida railway, the West Shore railroad, the Syracuse Rapid Transit railway, the Syracuse and Suburban railroad, and the Buffalo Lockport and Rochester railway." — ROSWELL DAVIS, *Secretary*, Wesleyan Station, Middletown, Conn. SIDNEY T. STRICKLAND, *Assistant Secretary*, 20 Newbury Street, Boston, Mass.

1906

In the February issue it was stated that some work had already been done on the Twenty-Fifth Reunion. We are now ready to announce the time and place. The Reunion will be held at the Oyster Harbors Club, Osterville, Mass., June 11 to 14.

A dinner meeting of the members of the Class in Boston and vicinity was held at the University Club on the evening of January 20. In addition to the two secretaries the following were present: Benham, Carter, Wetterer, Ginsburg, Ball, Hatch, Kasson, Mowry, Sherman, and Clarke. Those at the dinner were shown pictures of the Oyster Harbors Club and all agreed it to be a most attractive place for a Reunion. The following men were named as committee chairmen, thus insuring success for our biggest reunion ever. Attendance, Charlie Wetterer; Program, Ned Rowe; Transportation, Ralph Clarke; Finance, Henry Ginsburg. By the time you read these notes the whole Class will have received at least one notice of the Reunion. You should have heard about it through other channels. If you are still undecided, please consider this a very personal request to make your decision to come to the Reunion. We had a total attendance of nearly 50 at our Twentieth Reunion. All who attended were very enthusiastic and suggestions were made for another before the time for our Twenty-Fifth. Those who attended in 1926 will surely attend this year if they can possibly do so. We should reach an attendance figure of around 100. The Oyster Harbors Club, where we are going, is a very exclusive development on the southern shore of Cape Cod. It is not available to everyone but by special arrangement they have agreed to entertain our Class. They are making special rates for us. We know

1906 Continued

from people who have been there that the food is excellent and for the golfers, the golf course is a real 18-hole course. Two or three days spent at this place in the company of other members of the Class will be better than a week of the usual vacation. If you have any doubt about this, come to the Reunion and find out for yourself.

The Secretary attended the mid-winter convention of the American Institute of Electrical Engineers, held in New York, January 26 to 30. Otto Blackwell was joint-author with H. L. Wills, of the Georgia Power Company, of a paper entitled "Status of Joint Development and Research on Noise Frequency Induction." While in New York a call was made at Herbert Whiting's office to learn that he had gone south for his health. A week or so later a postcard was received from Herbert with the following message: "On my annual pilgrimage to the shrine of 'John Barleycorn'." Herbert also added that he flew over the canal and it was a great sight. Under the circumstances we trust his health is improved.

The following is taken from a letter kindly loaned by Professor Locke. The letter speaks for itself. The "J. H." mentioned in the letter refers to Hirt's brother. Realizing that Hirt wrote this without intending it for publication we feel rather guilty in appropriating it, but the letter will be so interesting to the members of the Class, we know he will forgive us for reproducing it here. "... J. H. and I have been working for many years on a chemical that would be commercial in production to remove all traces of sulphur compounds (or Mercaptans) from gasolenes. Accomplishing this research we spent about \$25,000 during the several years. We then made a solvent for oleoaginous materials as well as fats from tankage and allied products.

"We raised \$100,000 which we spent in research for development of an apparatus to extract oils and fats from materials, using continuous flow methods. We have two such plants now in commercial use. One on dehydrated garbage and one on flax products. These units work under continuous inlet and outlet principle. The entire unit being under vacuums of various intensities as the needs of the work require. J. H. had been carrying on as research chemist for various mining companies and I have been watching my oil properties and refining plants, so the new development work has had to fit into our lines as we plugged along. Our research work has now reached the commercial stage and shows marked economies over existing methods. J. H. passing off left things at the turn of the road. He was a hard patient worker and is greatly missed. ..."

The following is taken from the Perth Amboy (N. J.) *News*, where it appeared under the heading, Perth Amboy Builders. "Colby Dill was born in Boston, Mass., December 29, 1882. He passed his childhood and early youth in that city and attended the Boston Latin School from which he graduated in 1900. He then

entered Harvard University, where he took the academic course and graduated with the degree of A.B. in the Class of 1904. Mr. Dill took a strong interest in scientific and technical subjects and, deciding on a career of this kind, took a course in the Massachusetts Institute of Technology, at Boston, from which he graduated in 1906, with the degree of B.S. Post-graduate work at the same institution of learning brought Mr. Dill the degree of M.S.

"Mr. Dill then secured a position with the United States Geological Survey as chemist. He remained with the government, being stationed at Pittsburgh, Pa., for six months and then resigned to become works manager of the Perth Amboy Chemical Works. He came to Perth Amboy in 1908, operating the Perth Amboy Chemical Works most successfully until January, 1917, when he left this company to accept the office of assistant to the second vice-president of the Roessler and Hasslacher Chemical Company. His work with this company has also been successful and he has risen to the office of assistant vice-president and general superintendent, which he holds at the present. Mr. Dill is recognized as one of the leaders in the industrial life of the city. He takes a great interest in everything of an industrial or civic nature that is designed to further the interests of Perth Amboy as one of the greatest and most progressive industrial and business cities of the east."

In conclusion once more you are urged to attend the Twenty-Fifth Reunion. — JAMES W. KIDDER, *Secretary*, Room 505, 261 Franklin Street, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

1907

E. Leon Chaffee, who is professor of physics at Harvard University, sailed with his wife and baby on February 27, for Europe, to be gone until September, 1931. This is his sabbatical year and after spending some time on the Riviera, he expects to travel quite generally in Europe devoting some time to professional work. — We see Herbert Fletcher quite often in Boston. He is an engineer and salesman for the A. B. See Elevator Company at 168 Stuart Street, Boston.

Sorry, classmates, to have so little to offer you this month, but notes and news are sadly lacking. — BRYANT NICHOLS, *Secretary*, 2 Rowe Street, Auburndale, Mass. HAROLD S. WILSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The second get-together dinner of the 1930-1931 season was held Tuesday, February 10, in the Faculty Dining Room, Walker Memorial. The following were present: Coffin, Merrill, Cook, Beede, Ames, Gurney, Medlicott, Skillings, Mayo, Carter. As this was our annual meeting, the usual reports were submitted and you will be glad to learn that the Class is still solvent even after paying our bills for last summer's re-

union. Following the dinner Jeff Beede showed some very excellent moving pictures. The next meeting and dinner, which will probably be the last of the season, will be May 12. Usual notices will be sent in advance of the dinner, and we hope for a good turnout. — Skillings' new address is 51 Hyde Street, Newton Highlands, Mass.

Announcement is made by Miss Marie V. de Nerva, New York, and Henry Walke Dun, Jr., Rye, N. Y., of their engagement. They plan to be married this spring. Mr. Dun has been engaged in engineering since his graduation from Technology, and during the World War he was active in railroad construction work at St. Mihiel. — Russell, Fairfield & Ellis, 99 Milk Street, Boston, announce the admission of Franklin T. Towle and Percy L. Handy to their firm. — HAROLD L. CARTER, *Secretary*, 185 Franklin Street, Boston, Mass.

1909

Joseph N. Stephenson, X, writes that the Institute of Industrial Arts at Garden-ville, Quebec, of which he is principal, besides being the editor of the *Pulp and Paper Magazine of Canada*, has just finished a rather big job in the publishing field. The Institute has brought out a translation in French of the five-volume text book entitled "The Manufacture of Pulp and Paper." The English text is a product of the McGraw-Hill Book Company and the text was prepared under the direction of a committee representing the pulp and paper industry in Canada and the United States. Owing to the large number of French-speaking employees in the mills of Quebec it was found advisable to bring out a French edition. This text is a translation of the revised English edition.

Stevie took a 7,000-mile trip last summer, visiting all the paper mills in the West of Canada, going out to Vancouver, up the coast as far as Alaska, and back over the modern route. He was disappointed in not being able to get up as far as Juneau where classmate Joseph C. Dort happened to be at the time on work for the United States Hydrographic Survey. It is understood that Dort has done the preliminary survey work on which is to be based the engineering for the new paper mills that will some day be flourishing in Alaska.

Stephenson also sent in the following anecdote: Bishop Ernest M. Stires went to Hobart College to preach, taking his son with him. He chose the letters in the word Hobart as a guide for his sermon, and growing enthusiastic over his subject preached a full sermon on each letter. H for honesty, O for order, and so on, preaching for over an hour. As they were leaving the chapel a boy back of Ernest Stires asked another what he thought of the sermon and the reply was, "Thank God, I didn't go to the Massachusetts Institute of Technology." (From the *Kenyon College Bulletin*.) — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, General

1909 Continued

Foods Corporation, 250 Park Avenue, New York City. MAURICE R. SCHARFF, Assistant Secretary, 19th Floor, First National Bank Building, Pittsburgh, Pa.

1910

The monthly letters are bringing in some results and making it worth while to look up the 1910 notes these days. The busy B's are with us this month. Professor Jack Babcock writes: "Here is another note for the Class of 1910. In a report by Dr. James L. Tryon, Admissions Officer at the Institute, he mentions that Clifford C. Hield, who was or is still President of the Technology Association of Minnesota, acted as good-will ambassador for him in Minnesota recently when he was visiting preparatory schools and colleges in the interests of the Institute. For the better part of two days Cliff traveled around with Dr. Tryon, visiting schools in St. Paul, Northfield, and Faribault."

Frank Bell had to write me a letter when his turn came, because it was his own idea sending out requests for notes. His communication follows: "Had just received The Technology Review and noted a few remarks from John Ahlers apropos the Reunion when your letter arrived. There is nothing new to tell about myself. Have been in the contracting business here in Dallas these last ten years, our outfit being the Uvalde Construction Company of which I am Vice-President (named from an unusual deposit of Limestone Rock Asphalt obtained in Uvalde County, Tex., out of which we make our "Valdithic" paving material). We are general contractors and fairly busy at present building two dams north of Fort Worth, Texas, these jobs aggregating about \$4,000,000, which together with some storm sewers, miscellaneous concrete structures in our levee district, and a few city paving contracts, are keeping us from howling too much. My two partners in this business are W. P. Bentley, M. I. T. '04, and Dwight Horton, whose two sons graduated from the Institute last June, so the firm is rather 'Technicolor'."

"Domestically, I still have the same wife and children (two boys), am housebroken, but still able to throw a bluff occasionally."

"Now a few words at random — yes, John Ahlers is right. We play golf all year around (that is, some of us call it playing golf). The difficulty is that we Texas country boys coming from our balmy clime to your effete East are at a great disadvantage, being thin-blooded and cold, making it necessary to start out embalmed with the Ahlers' brand of 'Bitters' and, not being used to the bare foot technique, not to say anything of a New England rain and rather ingenuous first tee talk, find it rather difficult to uphold the honor of this great state otherwise than verbally. However, if we can get you 'Yanks' down here we will do our best to start you off on the first tee spellbound and take care of you at the 19th hole so that the 'milking

process' will not be painful (Bert Wohlge-muth and Charlie Green also take note of this)."

"It did the old heart good to renew contacts again last June, and I believe all of us carried away pleasant memories and hopes of another in the future; and those who were not with us missed a lot as well as being missed. Remember if any of you are in this part of the country the latchstring's out."

Marcus Beebe may be way off in South Dakota, but he is always interested in the Class and writes a good long letter: "Yours of the 31st of January received and I am very glad indeed to add a little bit of news and certainly wish it were more. Since writing the last time I took a trip through the Mediterranean and had a great deal of pleasure in seeing the things that we all read about, such as the Pyramids and the Sphinx that are featured in Mark Twain's 'Tom Sawyer Abroad.' The foreign news is always more real and I cannot pick up a newspaper without reading an article or seeing a picture of something that I saw on this trip."

"For the time and money the Mediterranean trip is the best bet in the world and it does not cost any more money to travel there than it will to go to London, Paris, and Berlin which are a good deal like our own cities and do not furnish any new ideas. One really good idea I got is that the Mohammedans have a lot of good ideas and are just as sincere in their religion as the Christians are in theirs. They should be respected for the good points of their religion. This winter I taught the adult class in the School of Missions. We studied India, and what I saw in Cairo, Jerusalem, Haifa, and other Mohammedan cities helped me to understand the Indians' viewpoint. Their religion also has a couple of good ideas that Christ spoke of in the Sermon on the Mount but which have been rather overlooked in these days when people spend a large amount of time traveling with no particular destination. A year ago this winter I traveled to the Hawaiian Islands, and this was also the first time I had been in that land of boosters (based on money raised on Iowa farms), California."

"I believe there is going to be a trend in the future based on our present over supply of manufactured goods (compared with our former notions as to consumption) of more seasonal labor. If people can work nine months in the year in the northern climes and secure enough money to keep them easily for three months in the southern climes in the winter, that is just what they will do."

"This winter I have been taking a different kind of journey by reading 'Little Journeys' by Elbert Hubbard which, as all of the Class of 1910 knows, are biographies of famous men in very interesting language and, to me, inspirational. I am planning on making a chart showing the crop of famous men based on country and time. From reading so far it is apparent that the crop of famous men has been especially good in

THE TECHNOLOGY REVIEW

certain countries and also in certain centuries. This is a kind of trip that any one can take with small expense and much benefit."

"This summer I built the Marcus P. Beebe Memorial Library, cut of which is on this letterhead. For the benefit of the class in architecture, I would say that I had an awful time getting the design for this worked out, as some very good architects maintained that the only style a library could be built in was the Greek pillared rectangle or the dome effect of the Romans. With all due respect to the architects with whom I came in contact, I think they are ossified or should I say simply copy-cats. I regret to say that the building trades have the same idea. The architects have the reputation of wanting to do things because they have always been done that way and that is not the reputation of engineers. Anyway everybody says that the building is easy to look at and I hope that some of the fellow students at Tech can stop off on some of their trips and look it over." — DUDLEY CLAPP, Secretary, 40 Water Street, East Cambridge, Mass.

1911

Good Old Dick Ranger is again an independent engineer, on his own in a consulting way, specializing in radio, acoustics, and general electronic technique. At present he has a small laboratory set up at his home, 574 Parker Street, Newark, N. J., and has with him four of his former associates in the Radio Corporation of America. He is still on a retainer with the R. C. A. for facsimile or radio picture transmission, such as he has specialized in for the last few years.

Dick says his endeavor will be to use the abilities developed along radio lines in other, perhaps quite different lines. "It seems," he says, "that the field of electronics which has come along may make an even greater use of the special technique of radio in entirely new fields." The most advanced development, at the moment, in his Newark laboratory is electrical music. Fair warning is now given you, classmates, to expect something to happen at our Twenty-Year Reunion as unique as was the facsimile radio message Dick sent us from London at our reunion at Saybrook five years ago! Leave it to Dick to bring something interesting with him."

What an outstanding figure Dick has been in air transmission! Resigning as Commanding Officer of the Signal Corps Laboratories at Fort Monmouth ten years ago, Dick joined the R.C.A. and his first work was the building of the long wave, trans-atlantic receiving stations of that company, notably that at Riverhead, Long Island. Subsequently, he built the first R.C.A. broadcasting station at Aldene, N. J., started the building of WJZ atop the Aeolian Building, New York, and of WRC in Washington, and was in on the first ship-to-shore telephony on the S.S. *America*. Everyone knows the effects of his most outstanding achievement to date — the transmission of pictures by radio — now on a highly

1911 Continued

practical commercial scale. 1911 is proud of you, Dick, and wishes you the highest measure of success in your new endeavors! In a recent letter Dick, with his usual modesty, says: "Our music work is really quite well along; the whole job is in making it more practical. We do not want to make the mistake of getting people too excited about it prematurely."

Jim Chadbourne and his wife, Uncle Sam's agents here in the Douglas Hill post office, believe we should have had reply postals instead of slips in envelopes, for the mail is making new daily records here and they don't know till I tell 'em the preponderance of favorable replies. No kidding, we're going to have a wonderful attendance and there will be quite a number of 1911 children here, too. — Lloyd Cooley, X, now represents the F. J. Stokes Machine Company in Chicago. The company makes chemical engineering equipment also pharmaceutical machinery, tube fillers, tablet machines, dryers, and so on. He and his wife make their home at 6153 Dorchester Avenue, Chicago.

Allston T. Cushing, I, senior valuation engineer, U. S. Department of Agriculture, Kansas City, Mo., announces the arrival of another prospective Tech man in his home on February 5, Gerald Hersey Cushing. Both mother and son are fine, Cush reports, as is their other boy, age 6, who has recently recovered from a flu attack. Cush says he is as fat as ever and feeling fine. Two rather long rate hearings have taken most of his time this winter to date and some stockyard appraisals are on the docket for spring.

Minot Dennett, II, President of M. S. Dennett Company, Detroit, says the '11 men in his district are anxious to attend the Reunion and providing the business "repression" shows signs of being over by June, he hopes to lead quite a delegation on to Douglas Hill. A similarly hopeful report comes from Bunnie Wilson, XIV, in Pittsburgh. — Joe Dunlap, II, has transferred from Buffalo to Akron, Ohio, where he is with Goodyear Tire and Rubber Company, while Doc Moore, II, is still in Fort Worth, Texas, where his former Miller Company has been re-organized as the Perfection Ice Scoring Machine Company. — Chet Morey, II, is enthusiastically looking after Reunion interests in Rhode Island, and writes that he is "still at the Rhode Island Tool Company, Providence, as superintendent, wrestling with the usual problems that fall to the lot of the shop executive in these critical times; and strenuous and heart-breaking times they are with not enough work to go around and men endlessly tramping from door to door looking for jobs not to be had. Often I am minded to envy you in your peaceful pastoral setting and hope this year to be with you at the Reunion. This year I have been elected President of the Providence Engineering Society, an association of 1,200 of the leading engineers and business men of Rhode Island, an honor that I prize much, as it is one of the leading local engineering organizations of the country. After serving a year as President

of the Associated Industries of Rhode Island, I have been elected to another term, and although this year has been one of poor business, it has been a busy one for me." More power to you, Chet!

Carl Schafer, XIII, writes that in addition to his major position as instructor in Mechanical Drawing, Sultzberger Junior High School, Philadelphia, he teaches three nights per week at the Drexel Institute and on account of school work being heavy at the end of June he is afraid he will not join the happy throng at Douglas Inn. On the other hand, from Passaic, N. J., comes word from Don Stevens that he wished to be put down for all the sports and diversions listed in "Theleverer" return stub "and ping-pong!" Yes, we have facilities for that here, too.

Charles R. Stover, VI, continues in the field of illumination engineering, being now affiliated with the National Lamp Works of the General Electric Company, 20 North Wacker Drive, Chicago. — Ted Van Tassel, X, who of course is a Yes-man on Reunion attendance, wrote in early February that he "Had a very pleasant surprise here in Norwich, Conn., this week when Johnnie Scoville, IV, drove down from Hartford with Lloyd Cooley, X, and Lloyd's father, and although our reunion was short, it was highly pleasing and I certainly am looking to June 26 with keen anticipation."

Bill Warner, I, writes from Nowata, Okla., that his Warner-Caldwell Oil Company activities will unfortunately keep him out there where only camels seem satisfied and prevent his attendance at the Reunion. He plans a motor trip at some later date that will include New England, however. "Last summer," Bill writes, "our family was back East and I was in Washington a month ago. The local oil producers are trying to get the members of the Senate and House to pass a bill limiting the imports of oil in this country. It is a long and painful story. Our family of three boys is rapidly growing up. I never felt so old in my life as last Christmas when our oldest boy, who is attending Shattuck School in Minnesota, came home with some catalogues and papers about Tech. A representative (Dr. Tryon, admissions officer) had given a Technology talk before his school and he was so interested he talked to the man and these papers were sent to him. About the next step I can see will be as a grandfather and that is too far ahead for me to be interested. It is a fright the way we are getting old, especially right in the midst of these depressing times. Our interests are mainly local, such as the production of oil and gasoline. Outside of that we can only talk about our children or our operations, and I don't know which is worse. Why out here in Oklahoma we do not even like to talk about our state politics."

Emmons Whitcomb, X, recently "made" the Letter-Box of the Boston Herald when he corrected an assertion in an issue of that paper that the "Orange Blossom Special" was the fastest long distance train in the world by referring

the Editor to Dean Lobdell's wonderfully interesting article, "The Fastest Trains," which appeared in the February issue of The Technology Review. — Let Pete White, II, pronounce this month's benediction: "Herewith class dues, Dennie. It is very gratifying to see the enthusiasm that is being shown over the forthcoming reunion, and it bespeaks the most successful reunion that we have had to date. I am sure part of this success is due to the fact that you have such a marvelous place for the class to convene. With you as organizer and managing director in control of all the facilities, I can see it is going to be the best and most enjoyable reunion there has ever been." See you subsequently! — ORVILLE B. DENISON, Secretary, Douglas Inn, Douglas Hill, Maine. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford, Mass.

1912

The Inquiring Reporter was tired. News was scarce. Scouring the wide world for Class Notes is oftentimes a discouraging job. Just as we were about to call it a day we remembered Clarence E. Morrow, IV, and decided to make one more try. Yes, the uniformed functionary in the lofty Equitable Building knew Mr. Morrow, but the concern with which Mr. Morrow was connected had moved away. G. E. Barrett & Company is now located at 40 Wall Street, he told us. So thither we dragged our weary limbs and sent in our card. Promptly the emissary returned with Mr. Morrow's instructions to show us in. We were led down through rows of desks to the big private office in the corner with four inches depth of oriental rug on the floor, soft light sifting through sumptuous drapes, and there behind the biggest mahogany desk we ever saw, sat our old pal, Clarence Morrow. Eighteen years ago he used to sit on one of those old battle-scarred chairs beside us in Engineering A. For a moment we were almost overcome, but a reporter gets used to facing almost any situation. "Clarence," we said, using his first name just like that to show that we weren't scared, even by Wall Street bankers, "Clarence, we want a story for the Class Notes."

"Well, well," he replied, "it looks like rain," or words to that effect.

"We want," we repeated, "a story about yourself."

"Indeed. How are all the boys?" After about three or four more attempts, we realized what the Hearst reporters used to be up against when they tried to interview old J. Pierpont Morgan, himself. Only, whereas Morgan used to shake his fist at the reporters and smash their cameras, we shook our fist at this Morrow person, demanded a story in the sacred name of the Class of 1912, and all that rot. Mr. Morrow, however, showed us with the utmost suavity and politeness (which made us feel somewhat more degraded than a crawling worm) why it would be quite unthinkable for him to give us a story. So we slunk out as gracefully as we could under the circum-

1912 Continued

stances, but as we were leaving we had the nerve to ask him just what his job was, or what kind of a title went with mahogany desk and oriental rug. It developed that Clarence E. Morrow is now a Vice-President of the firm of G. E. Barrett & Company, dealing in bonds. He commutes from the exclusive and aristocratic colony in Stamford, Conn., and has traveled widely, we know, but we can't tell you much more than that. We went home anyway with one bit of grim satisfaction. We had pounded the desk and had shaken our little fist at one of Wall Street's Big Bankers, and that helps a lot after what Wall Street has done to us during the past 18 months.

Occasionally, though, your secretarial staff gets a break. E. C. Van Syckel, III, dropped in to see us recently and with a little judicious fishing we managed to get the makings of a story out of him. Also a good cigar. Van went to the Pennsylvania Steel Company in 1912 to learn the business. After a year or two of research and experimental work around the steel mills, they put him to surveying and laying out streets for Steelton, Pa., the steel company's town. Then he had to do the field engineering job during the construction of the streets. The wanderlust got him in 1915, and with Harold B. Davis, III, he put in about six months prospecting for gold in northern Ontario. They found some gold, but not enough to get rich on, so Van came back to civilization and went to work as advertising manager of the Becker Milling Machine Company, Hyde Park, Mass. One thing led to another and the last few years he has been representing the Poldi Steel Corporation of America in Eastern New England, which means Rhode Island, Massachusetts as far as the Connecticut River, New Hampshire and Maine. His specialties are tool steel and heat treating of the various types. Van Syckel says he runs across M. I. T. men quite frequently, and occasionally sees members of the Class. In 1928, Van Syckel married Audrey B. MacDougal of Boston, and they now reside at 115 Kilsyth Road, Brookline, Mass. Mrs. Van Syckel's sister is married to another classmate, Rock Livingston Comstock, X. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw Hill Publishing Co., Inc., 10th Avenue and 36th Street, New York, N. Y.

1914

"Why I Have Turned Grey," or "Trying to Make a Living in the Paper Industry," by Jimmy Judge of Holyoke, was the lively topic of our Boston luncheon meeting held February 4 at the Engineers Club. The usual jolly time was had by those attending, and another notch was cut in our long stick of pleasant gatherings. Those present were Judge, Atwood, Crocker, Ahern, Corney, Horton, Fales, H. S. Wilkins, Trufant, and Richmond.

When Parsell visited your Secretary recently he passed along some interesting information regarding Johnnie Leathers'

homemaking activities. Quite contrary to the usual class correspondence statistics, Johnnie replied pronto to your Secretary's request for details. The letter was so entertaining that part of it is quoted below: "While some Tech men quite properly choose to build their own houses, Mrs. Leathers and I get a tremendous throb out of living in a historic Westchester cottage which is known to date from 1681, and was then occupied by Capt. Charles Theall, an officer of the Westchester 'Train Bands.' The house is on a Post Road, and is in the middle of the section (between White Plains and Kingsbridge) which was ravaged by the American 'Skinners' and the British 'Cowboys' during the Revolution. If our regard for this cottage seems exaggerated, I will challenge any Tech man to make a two-hour test at the B. T. U. output of our six-foot living room fireplace, and then withhold his enthusiasm for heating plants of 1681. The last complete test was run by R. L. Parsell and family, and resulted in a very favorable report.

"Many a '14 man will appreciate the fun involved in breaking down plaster walls and finding immense fireplaces behind them, but in order to appraise the reflex produced by the ensuing bills for dampers, flue construction, and so on, you must have the experience! I'd be glad to condole with any classmate who has also survived this ordeal. Address me, Old Post Road, Rye, N. Y." Leathers is the proud father of three girls and in ending his letter he writes, "... just visualize father's lip-stick bill in 1945." Cheer up, John, 1945 is the year that the war Adjusted Service Certificates are payable.

Chet Corney has forwarded a letter he received from Yu Mai Chu who is chief engineer of the Kwang Tung Electric Supply Company of Canton, China. Chu writes in part: "The Provincial Government assumed control of our Company on October first. The future seems to be bright. Of course it depends a great deal on politics and political conditions. Our peak load so far this year was only 16,000 kilowatts. Far, far below yours! Our former manager had ordered two 1,000 kilowatt Diesel engines which may be in operation by next August.

"We had designed a new plant with a 20,000 kilowatt unit for the start and ultimate capacity of 80,000 to 100,000 kilowatts. We are simply waiting for money for this new station. The exchange rate affects us badly here. Your idea of sending young Chinese to inspect your new plants is a very good one. I will see whether I can come over in 1933 to attend some engineering conferences held during the big Chicago Exposition."

From Commander Joe Currier, who is stationed at the Boston Navy Yard, it is learned that Capt. L. W. Burnham of the Marine Corps has been decorated by the President of Haiti for his work with the gendarmerie of Haiti. — Commander Ralph Weyerbacher has recently been placed in charge of the material section of the Navy's Bureau of Aeronautics. Ralph has distinguished himself in his

construction work on metal planes as well as on lighter-than-air craft. That he is both practical as well as theoretical is evidenced by the fact that he is the holder of pilot licenses for both airplanes and lighter-than-air craft.

Our distinguished honorary member, William Jackson, of the information office at Technology has prepared for us some interesting statistics regarding the members of the Class. The first is a table of their geographical distribution and the second is their occupational classification: Alberta, 1; Argentina, 1; Brazil, 1; California, 13; Chile, 1; China, 14; Connecticut, 16; Cuba, 2; Delaware, 3; Denmark, 1; District of Columbia, 10; Ecuador, 1; England, 2; Florida, 2; Georgia, 1; Honolulu, 2; Illinois, 12; Indiana, 3; Kansas, 1; Kentucky, 2; Louisiana, 2; Maine, 1; Maryland, 5; Massachusetts, 130; Mexico, 1; Michigan, —; Minnesota, —; Missouri, 5; New Brunswick, 2; New Hampshire, 4; New Jersey, 11; New York, 60; Ohio, 7; Oklahoma, 2; Ontario, 3; Oregon, 1; Pennsylvania, 17; Rhode Island, 9; Russia, 1; Liberia, 1; Tennessee, 2; Texas, 2; Utah, 1; Vermont, 1; Virginia, 2; Washington, 2; Wisconsin, 3.

Chief Executives, 6; Owners of Plants, 14; Superintendents of Works, 16; Treasurers of Concerns, 31; Plant Managers, 15; Presidents, 22; Professors, 14; Mayors, 1; Mine Owners, 2; Bankers, 8; Executive Secretaries, 4; Naval Officers, 8; Directors, 8; Vice-Presidents, 22; Army Officers, 6; Chief Experts, 7; Ship Owners, 2; Retired, 5.

The above occupational list is only partial. William, we thank you for your efforts. — HAROLD B. RICHMOND, *Secretary*, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, Long Island, N. Y.

1915

The Boston and New York Class dinners planned for February have, unfortunately, had to be postponed until some time in March, so then we can get together and have some interesting new notes for our column. A few personal contacts, however, help to give us a few lines since no one has written me anything. I like this job but it's up to you fellows to make it successful. So in Buffalo recently I saw Ben Neal, X, with Mrs. Neal. Ben is an official of the Norton Company at Rockport, N. Y., and is a leading citizen of the community. Willy Wilson, XIV, is associated with him up there. Ben would like to hear from Reg Pollard, X, and Pond, X.

I had dinner with Gabe Hilton in Buffalo in a favorite place of his there. I always have a good time with Gabe. Then I spent an evening with Ben Lapp, X, who is with the National Aniline and Chemical Company at Buffalo. We reviewed his pictures of our Class relay team and the extremely youthful appearances of the boys then merely adds to the realization and grief of the approaching years of our old age. Twenty years is a long time. In New York I had dinner and

1915 Continued

spent the evening with St. Elmo Piza, one of the few remaining bachelors among us. As misery loves company, we had a time of it consoling each other, though each of us is secretly watching the offer for the first break in the ranks toward matrimony. But he is as dapper as usual, giving him a handicap over me at the start of the race.

I phoned Louie Zepfler, V, Bob Mitchell, V, Ed Fonseca, VI, and Jim Tobey, and was glad to talk with them all. Because of the restrictions of the phone company, Eddie Fonseca was necessarily limited to a social conversation without any of his rollicking stories. In Boston I have seen Clive Lacy, VI, Abe Hamburg, XI, Jack Dalton, X, Ralph Joslyn, X, and Max Woythaler, V. I have done a little holiday celebrating with Weare Howlett, X, Pirate Rooney, I, and Frank Scully, I, and Jac Sindler '17, — a bad, hard bunch to be out with.

Next issue will be the big one. There have been no calls for class dues for two years at which time about 25% of the class responded. It's a small \$2.00 dues, so send along your check to me as you will receive only one notice with no dunning letters. I shall rely on your loyalty and support and interest to make this a big collection and equal that 25%. Best personal regards to everybody. — AZEL W. MACK, *Secretary*, 379 Marlboro Street, Boston, Mass.

1916

The committee on Class Reunion this year has finally made arrangements with the Riversea Club at Old Saybrook, Conn. The date has been definitely set for the first week-end in June — June 5, 6, and 7. The Riversea Club is most conveniently located 37 miles from New Haven and 18 miles from New London, Conn. It is right on the shore of Long Island Sound at the mouth of the Connecticut River. The railroad station is Saybrook which is only two miles away and all five and one-half hour New York and Boston trains stop coming through. The club has accommodations for around 80 men and we are sure of having the premises for ourselves exclusively. There is a nine hole golf course conveniently located, tennis courts, swimming and all the various activities of a regular country club.

When over in New York last week I had the pleasure of a brief visit with Steve Brophy and Bill Farthing. They are both in the best of health, but I was surprised to learn that Steve had just resigned his position with the Revere Brass and Copper. His next work remains a secret but he did confide to me that he and his family were going to take a very much needed six weeks' vacation down in Florida. Upon his return to New York he intends to devote a large part of his time to his duties in connection with the coming reunion.

A recent clipping from the Bristol, Conn., press states that Louis W. Stevens has just been promoted in the Veeder-Root Company to a position as general superintendent, having charge of all

manufacturing of both plants in Hartford and Bristol. — Harmon E. Keyes, XIV, is now located at Miami, Ariz. He is chemist for the Miami Copper Company and very much engaged in community activities. Keyes is a captain in the Chemical Warfare Reserve and takes an active part in their various affairs.

I recently had the pleasure of receiving a book published by Destroyer Squadron 15 of the U. S. Navy. One I. B. McDaniel was art editor for this publication entitled "Down Under" which covers the activities of Squadron 15 during their 1930 fall cruise in the Far East. Mac is on the U.S.S. *Black Hawk* which is flag ship for the squadron. Mac writes that he expects to be home again before long.

Several of the Boston boys got together recently at a luncheon to plan for the coming reunion in June. Ralph Fletcher and Night Owen were the moving spirits and we expect to have another get-together again shortly. The Boston boys feel confident that they can muster a larger number of the Class from this section than the gang from New York will be able to get together. A wager has already been made with various prizes to be awarded. — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, 7338 Woodward Avenue, Detroit, Mich.

1917

Carlton C. Adams has left the Chemical Department of the Pacific Mills, Lawrence, Mass., and has joined the U. S. Finishing Company at Norwich, Conn.

Mr. and Mrs. Hamilton Wood announce the arrival on February 6 of Elizabeth B. Wood.

Edward Wadsworth Rounds dropped in at the Institute during February and gave a series of lectures to advanced students in aeronautical engineering. He is now employed by the Navy in a consulting engineering capacity. He reports that he hears from Alan Sullivan at least once a year (Christmas cards), and carries on a similarly active correspondence with others. When he last heard from the famous Chinese wrestler Ping Yok Loo, '16, he was in charge of an arsenal at Tsein Tsein. — Bill Sunday came into Boston in February for a series of meetings here. As he stepped off the train he asked for news of Rad Stevens and was shown a copy of the *Watch Word*, the publication of the Elgin Watch Company for January, 1931. Rad has moved up in the world as may be seen by the following quotation from that publication: "G. Radcliffe Stevens, who has capably served as foreman of the Plate Department since December 1, 1924, following the death of Edward D. Wheeler, has been made Manager of the Production Control Department of the company, following the merging of the Material Assigning and Material Control divisions on January 1, 1931." The following letter was recently sent to the foremen of the factory by Mr. Herbster, announcing the above promotions: "Effective January 1, 1931, the Material Assigning and

Material Control Divisions will be merged into a new division of the Superintendent's Office, to be known as the Production Control Department, with G. Radcliffe Stevens as Manager and Lawrence Burbury as his Assistant. — The scope of this new department will be enlarged as rapidly as possible to control all raw materials, supplies, material in process, finished material, and ultimately the entire factory product. The progress made this year in the control of finished material, trade material, dials, and so on, confirms our belief that the permanent establishment of such a department will insure economy of operation through elimination of losses in manufacture and jobbing, and marked reduction of inventories.

"Mr. Stevens, who has been attached to the Material Assigning and Material Control divisions for some times in connection with his duties as foreman of the Plate Department, entered the service of Father Time's big family on January 3, 1921, going at first into the Assembling Room. On March 1, 1921, Mr. Stevens was transferred to the Timing Department and later on May 1, 1921, became a member of the Train room, where he was made foreman of the department on January 1, 1922. At the death of the late Edward D. Wheeler, Mr. Stevens was appointed foreman of the Plate Department, where he has served most efficiently since that time. He has served as President of the Foreman and Officials Association for the last two years, and has always taken a decided interest in the welfare and activities of the company."

Dad Wenzell sent the worthy Dean a card from the eastern end of Cuba, which said little about what he was doing there. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

In distinct contrast with the high intellectual level which we have thus far so nobly advanced in these columns, our entire space this month is to be devoted to nothing more elevating than money. We shall discuss how to make it, how to spend it, and how to lose it.

Philbrick has been spending some holidays in a cabin in the San Bernardino Mountains after a strenuous year during which he earned the mundane rewards that go with having converted the Wilshire Boulevard Association, the Lion's Club, the Rotary Club, the Good Government Association, and the Ladies' Home Missionary Society that the type of signal used to regulate traffic on Wilshire Boulevard, Los Angeles, was unfit for the Chicago stockyards, and should be replaced by equipment manufactured by his company. He promises us some snapshots of the job after it is finished. One does hope that some attention will be paid to synchronizing the lights in such a way that the police box lights will not interfere. Last summer we brought our old model T to anchor in front of a red light in New York, only to find after 15 minutes of spitting and cussing that it was a red light atop a police box.

As for spending money, we know of several worthy ways, among them that of contributing to the Alumni Athletic Fund. Make your checks payable to ALLAN WINTER ROWE, Secretary, 80 East Concord Street, Boston. The most exasperating way to lose money that has yet come to our official attention is to have it forcibly taken away from you. "A well-dressed youth about six feet tall walked up behind Frank G. O'Connor as he was closing the door of his garage on Stearns Road, Watertown, on February 17, put a revolver against his ribs and demanded his money. O'Connor had just put his car up. The youthful robber forced him into the garage and went through his pockets, robbing him of \$80. A second man waited outside. The pair fled in a car that had been parked on the opposite side of the street, with the motor running, and headed down Mt. Auburn Street, toward Cambridge." — F. ALEXANDER MAGOUN, *Secretary*, Room 5-328, M. I. T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, 51 Houston Avenue, Milton, Mass.

1920

A very welcome note from Jim Downey advises me of the birth of James F. Downey, 3d, on February 5. Jim also has a little girl four years old. He is in engineering work with the Charles E. Bedaux Company of New York City and is at present located at High Point, N. C., where he is on a job which he expects to complete this spring. Jim says that until then he will gladly welcome a visit from any of the gang who are anxious to get in a little golf at Pinehurst. He may be reached at Madison Apartment 9, High Point.

I had a pleasant visit with Frank Marconi who is still doing well at the investment business in spite of the depression. Whenever I see Frank he asks after the other fellows, but never gives me any information about himself, so all I can tell you is that he is looking well and hasn't changed a bit. — In case you didn't know it, Jim Blodgett is located at Columbus, Ohio, and Stan Bragdon is in Milwaukee. Henry Hills has left Philadelphia and is now in Baltimore. Bob Tobin is with the Tile Roofing Company, Inc., at 370 Lexington Avenue, New York.

My piteous appeals for news apparently haven't had the slightest effect on any of you hard boiled birds with the one notable exception of William Benjamin West who writes I have shamed him into action. West was married last April 5 to Miss Ruth Williams of St. John, New Brunswick. He is with the Brooklyn Edison Company and lives in Brooklyn, wherever that is. — HAROLD BUGBEE, *Secretary*, 9 Chandler Road, West Medford, Mass.

1921

Only two months to our Tenth Reunion! By this time you should have received complete details of the big affair from the Reunion Committee, and also your appointment as a committee of one

charged with the responsibility of seeing to it that you yourself are present at the party. — Dr. V. O. Homerberg, X, Associate Professor of Physical Metallurgy at the Institute, and whose joint authorship of an article in *Metal Progress* was noted last month, has been engaged by the Nitralloy Corporation of 52 Broadway, New York City, as technical director. He has been consulting metallurgist for manufacturing concerns and engaged in research pertaining to the nitriding process. He is chairman of the publication committee and of the sub-committee on nitriding of the American Society for Steel Treating and is the co-author with Dr. Williams of the textbook "Principles of Metallography."

William A. Bevan is Professor of Aeronautical Engineering at Iowa State College, having resigned his position at Purdue in 1929. He has recently been promoted to the rank of Lieutenant Colonel in the Air Corps Reserve, U. S. Army. — Clark D. Greene, X, X-A, is with the Atlantic Refining Company, 5733 Butler Street, Pittsburgh. As we go to press Miss Joan Waterbury Greene is receiving congratulations on her first birthday. — Edgar S. Russell, II, is a designer with the Stone and Webster Engineering Corporation and is located at Pottsville, Pa. He was married in 1929 to Miss Bertha May Cross of New York City. — William T. Smith, X, X-A, now hangs his hat in the office of the Wailes Dove-Hermiston Corporation of 17 Battery Place, New York City, suppliers of Bitumastic pipe line coating materials. Bill is married and has two fine boys. — Gerald Tattersfield, also X and X-A, is on the road selling wool for the Tattersfield Company of 32 Letitia Street, Philadelphia. Jerry is the proud father of a daughter.

Herbert W. Reinhard, XV, has severed his connection with George H. Macbeth and Company of Boston and is now the Assistant Sales Manager of the Radiator Division of the Winchester Repeating Arms Company, New Haven, Conn. Herb has been continuously engaged in selling and sales administration since our graduation and is well equipped for his new duties. — Mr. Harvey A. Soule of Kingston, Mass., has announced the engagement of his daughter, Pauline, to Charles MacKinnon, II, who is Assistant Superintendent of the Plymouth Cordage Company of North Plymouth, Mass. Mac is a Captain in the Coast Artillery Reserve Corps and a member of the University Club of Boston.

Dr. F. W. Adams, X, X-A, Assistant Professor of Chemical Engineering at the Institute, presented a paper entitled, "Steam Consumption in the Drying of Paper" before the joint meeting of the Operating and Engineering Divisions of the Technical Association of the Pulp and Paper Industry at its last annual convention in February at the Hotel Pennsylvania, New York City. Ran into Fred and his charming wife in the lobby of the hotel as they were on their way to a hockey game to relax from the speech making. — Mr. and Mrs. George H.

Eckels of New Rochelle, N. Y., have announced the marriage of their daughter, Elizabeth Ann, to Mr. Lumen Tenney Thurber, XV. — Ray reports seeing H. F. Stose XIV, X-A, at the RCA Victor plant in Camden, N. J., where Harold is a research chemical engineer in the Engineering Department working on records. Sorry to have missed seeing Harold and Mrs. Stose when we went through Moorestown, N. J., last fall. Their address is 303 East Central Avenue.

Our Tenth Reunion in June. See you all there! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Co., South Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, Bell Telephone Laboratories, Inc., 463 West Street, New York City.

1922

When Eric would miss an issue of The Review as even he did at times, it seemed that he might by better planning have had at least a paragraph stating his opinion of classmates who failed to send information to be included in the Class Notes. My apologies to him and to others in a like situation — sometimes it just is not possible. I began to plan for a word to you for the March issue early in January, the notes being due to the editors on January 24, and now on the fourth they are going in, perhaps too late to make the press.

It would be an incentive if 20 or more fellows would write each month. What a column we could prepare! But with only an infrequent letter received, which is vastly appreciated don't forget that, there is a tendency to postpone action with the hope that further news will come in another mail.

New products are being developed in industry and new methods of producing and selling those already on the market are under way. Many of you are hustling faster than ever before and have accomplished something which might energize others of us to send on the good word.

Al Browning dropped by. He is with the same firm, now living in Detroit, getting new outlets for paint and improving old connections. Larry Davis is back in New York, now with Vacuum Oil, living up in Westchester — Scarsdale reaches him. Harry Rockefeller, with the Lynde Oxygen division of Union Carbide, is devoting time to further study of welding by oxygen. — John Church, with Pure Calcium Products in Painesville, Ohio, has one eye out for more sales, the other for new products. — Bill Bainbridge, formerly with Johns Manville, is now with Westchester Asbestos in White Plains, a distributor for J. M. Products. — Heine Horn, with National Cash Register in Newark, reports that the flu germ is under control, and his better half is away for a change of scenery. — Dale Spoor, with Air Reduction, is here in the Lincoln Building in New York. Where are the rest of you and what are you doing?

Earl Young, with the Bangor Hydro Store, specializing in ranges and refrig-

1922 Continued

erators in his sales work, has made a remarkable record in the past six months, placing second in President Graham's 450,000 campaign. — Herb Taylor, of the Brookline High School, has accepted a position as headmaster of the Edward Little High School in Auburn, Maine. He will assume his new duties early in March. You will remember that he married Miss Marion L. Gifford of Lawrence. They have one child, Edwin H. Taylor, now three years old.

Norman Smith, who was in the Geological Department at the Institute, is now doing independent research work at Waverly, Mass., on the theory of Ore Disposition. He has recently completed 13 months at Flin Flon, Manitoba, organizing a geological department for the Hudson Bay Mining and Smelting Company. — Dr. and Mrs. William Alfred Waddell announce the marriage of their daughter, Helen Annesley, to Mr. Charles Adamson Chase, Thursday, December 4, 1930, at Barbery, Sao Paulo, Brazil. — Professor William A. Waldschmidt, of the Colorado School of Mines, was called in to give expert testimony at the recent O'Laughlin murder trial at Denver. He set up a spectroscope to determine the nature of a substance claimed to be ground glass found in the stomach of the murdered child. — Tom T. Freeman has moved from Denver to Fort Worth, Texas, Box 983.

Roger D. Carver reports that he left Boston some months ago to become located with the Symington Company at Rochester, N. Y., in their foundry. His first job was metallurgical assistant to the Vice-President in charge of manufacture, and he worked between the Rochester plant and the plant at Depew of the Gould Coupler Company, which is owned by the Symington Company. For the last half year Carver has had complete charge of all manufacturing operations as Assistant Works Manager. Carver's family is still living in Dorchester, but he hopes ultimately to arrange matters so that they can join him in Rochester.

A letter from Albert Powell says: "I am proud to announce to the Class that a daughter, Mary Hope, was born to us on December 27, 1930. And I might add further, by way of news, that I am now in my fifth year as Instructor in Electrical Engineering at the Pennsylvania State College. I rarely see any of the Class of 1922 up in these limestone mountains, and yet Tech men are not scarce at this college. (The classes of 1920 and 1921 might also be interested in the above news.)"

Cheerio — perhaps we'll be deluged with news from you. It can't come too soon or too often. — RAYMOND C. RUNDLETT, Secretary, The Curtis Publishing Company, Lincoln Building, 42nd Street, New York, N. Y.

1923

Although our organization of course secretaries is, on the basis of news turned in each month, substantially defunct, the number of volunteer territorial reporters is increasing. Milt Parker, VII, is the

latest recruit, and in addition to the following, promises to send in items regularly about '23 men he meets as he travels around the country. I quote from a letter he wrote from Chicago to Pete Pennypacker and which was forwarded just too late to make the notes last month.

"As you may know, I am supposed to be a field technologist of the Research Laboratories of National Dairy Products Corporation with headquarters in Baltimore and a territory apparently comprising continental U.S.A. Right now I am in the midst of a tour which will take me out to Omaha and Sioux City and a swing around Kansas City, St. Louis, Louisville, Peoria, Danville, Illinois, and a few other side trips. Everywhere I go I keep an eye peeled for '23 men and occasionally renew friendships.

"Every once in a while I see Jack Storm, XV, when I get to Detroit which isn't very often. The last time I saw Jack he was busy as a hornet selling grinders to the automobile manufacturers. He gave me the low-down on the quality of metals going into our many horseless carriages. Last November in Cleveland, I spent a very enjoyable evening with Ella and Phil Riley, VII. Smoke Fuller, VII, was also in town for the Dairy Show, so we had a game of bridge. About a year ago, I literally ran into Herman Swett, VII, in an elevator of the Hotel Gibson at Cincinnati.

"Every once in a while I get to New York, when I go over to Walter Chrysler's monument and stop off at the 38th floor to get the thrill of being announced and duly escorted into the inner sanctum where Stubby Griswold, VII, presides in majesty over the fortunes of Zonite and Forhan's. Last summer, Louise, Brian (the young hopeful) and I made a short visit with the Griswolds and Rosabelle served a 'John's Special' (of Hotel Lenox fame) that moved me to poetry, although Earle Alfred Griswold couldn't eat his due to the entertainment my fletcherizing afforded.

"On one or two visits to Boston, I stopped in on Dr. B. E. Proctor, VII, who is now throwing the fear of God into the hearts of embryonic Course VII-ites. I hope to see Phil Coleman, XV, this week-end. Phil is with the Illinois Power and Light Company at Decatur, Ill. Talked with him over the phone about three weeks ago and he sounded as brisk and cheerful as ever. When I am home enjoying the antics of our young hopeful and the companionship of his mother, I receive mail and all '23 men at 5104 Norwood Road, Baltimore, Md. Let's hear from some more '23 men."

Bill Edwards '26, of the Tech Club at Denver, has taken it on himself to furnish us with a biographical sketch of various '23 men in Denver. This month he sends in the dope on A. L. Hill: "A. L. Hill, II, has recently completed seven and one-half years with the Ideal Cement Company of Denver, an operating and holding company with several plants in the Rocky Mountain area. Starting in July, 1923, in preparation for statistical analyses work, Hill was assigned to the

Portland, Colo., branch for six months' work as repair man, followed by six months of construction work. He was then transferred to the Chief Engineer's office in Denver for a year's work on the design and construction plans for the company's new power house to be built at Portland. On the completion of the plans, he was assigned to the actual construction work as Assistant Construction superintendent. This occupied another year at Portland, following which he was transferred to the company's Fort Collins plant and became assistant operating superintendent. Following three years at Fort Collins, Hill again returned to Denver and has now been in charge of the work, for which he originally prepared, for the past year and a half. During this year he has been Secretary-Treasurer of the Rocky Mountain Technology Club."

I have received the announcement of the marriage of Emily Lucy Culbertson to William B. Wingert on February 7 at Ironton, Ohio. Congratulations to the couple may be sent to 52 Gramercy Park North, New York City, where they will be at home after the first of March. — A clipping from the New York *Herald-Tribune*, forwarded by Pete Pennypacker, gives the wedding plans of John Brill whose engagement to Miss Martha J. Fenn of Wilmington, Delaware, was announced last month. By the time these notes appear the ceremony, which is scheduled for March 21, will be over. Joe Nowell is to be best man and Palmer Putnam one of the ushers.

I regret to report the death on December 30, of Samuel N. W. Huff of Syracuse, N. Y. — An address change reports that Charlie Koch is with the General Electric Company at Schenectady, N. Y. — John W. Voelcker has been transferred from Preston, Lancs, to the Phoenix Works of the English Electric Company, with which he is associated, at Bradford, England. — Two other address changes, the significance of which is unknown in these quarters, is that of Arthur Edwards from Wellesley Hills to Buffalo, and that of Irving Epstein from Chicago to Wilkes-Barre, Pa.

Pete Pennypacker sent in the following notes on the '23 New York Club: The Valentine Party held jointly by the Classes of '23, '24, and '25 proved to be a festive occasion. The party, a dinner-dance, was held in the Tavern Suite of the Commodore Hotel on February 14. There were about 70 present, the classes being fairly evenly represented. From 7 to 7:30 there was a general reception of guests and it was great to see so many contemporary Technology men together again. Shortly after 7:30 the large double doors leading into the dining room were thrown open and W. B. Coleman, '24, appeared in the doorway, in high silk hat and cape, as Master of Ceremonies. The dining room was decorated with large and small red hearts hanging from the ceiling and with Technology and Class banners. The places at the table were set off with Valentine favors, song sheets and announcements.

In the course of the evening several telegrams were received. Jim Brackett, President of the New York Club of 1923, was in Boston and could not attend. Telegrams were read expressing the regret of General Smedley Butler, the Wickersham Commission and certain well-known Chicago gangsters, that they could not be present. General singing was led by R. N. Black '24, assisted by Simonton and Correale of '24 and myself. This quartet also favored with some selections of their own. I seem to have been mixed up in the musical program also as one of an instrumental trio of 'cello, flute, and piano. Al Pyle played the flute as well as he ever did and Miss Alice Robinson was at the piano.

Bob Shaw, as the only Class President present, was called on for a few words. Another feature was a demonstration of mind reading by one who was announced as Professor Ican Guessem, the noted Indian mystic. Behind the turban, beard and robe, one might have recognized Lem Tremaine. Dinner over, the tables were struck and the dining room cleared. The Master of Ceremonies organized a Grand March in which we marched *and marched* until someone blew a whistle and made a "Paul Jones" out of it. Then the dancing got under way. Prize dances were won by Dave Kaufman (elimination dance) and Lem Tremaine (spot dance) and there were appropriate prizes for both men and their partners. After expressing the appreciation of the gathering by cheers for Bill Correale '24, who was in charge of the party, and for the Master of Ceremonies, the Stein Song was led by Black and the party broke up.

This affair gave us a chance to check up on several men who turned up there. Tom Rounds, whose engagement to Miss Marjorie Land of Riverdale, N. Y., was announced last month was on hand with his fiancée. Tom has a new address — Blind Brook Lodge, Rye, N. Y. — Bob Shaw is Secretary for the Chicago World's Fair to be held in 1933. He was married a little over a year ago and now lives at Pelham Manor, just outside of New York. — It is with pleasure that we welcome Miles Pennybacker to the New York Club. He has sold his previous business in Boston and is now with the Rainbow Light Company in a managing position. He lives in Scarsdale. He is married and has three youngsters — two girls and a boy. Further information has it that Robert V. Burns has left the State of Washington and is with Stone and Webster in St. Louis. We hope he will amplify this information for us soon.

A spring function of some sort is on the calendar of the New York Club of 1923, but the nature of the event has not been decided. Watch for announcements. — HORATIO L. BOND, *Secretary*, 31 Concord Avenue, Cambridge, Mass. JAMES A. PENNYBACKER, *Assistant Secretary*, Room 661, 11 Broadway, New York, N. Y.

1926

The Secretary wishes to correct an error made in these columns last month regarding class dues. The amount is only

\$1.00 instead of \$2.00 as previously reported. Already quite a few remittances have come in, but our exchequer could still stand a lot more. Along with the dues have come some encouraging replies about the Reunion which takes place June 6 and 7. Since this is our Fifth Reunion we should do everything to make it a gala event in the history of '26. The committee is diligently in search of a befitting background for this affair. Any suggestions will be most gratefully received.

Some of the following comments might be of interest. "It occurs to me that the less fortunate or unfortunate members of the class who have not had the opportunity or inclination to see the Institute and neighboring haunts recently might enjoy to spend their reunion in more familiar territory than Cape Cod." — "How about Cape Ann or Marblehead instead of Cape Cod?" — "The Cape Cod suggestion is a grand idea! We want plenty of room to romp in and we want a chance to get wet both externally and internally. Swimming or other water sports would be great. . . . I suggest a standard practical uniform such as painters' white overalls or duck pants and sweater over bathing suit. The small hotel sounds good. Have it broad-minded."

Der Konvergenzpunkt wishes to announce the recent publication of "The Killian Review," Vol. I, No. 1, announcing Carolyn Makepeace Killian, born February 26, 1931. — J. RHYNE KILLIAN, Jr., *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

Course VI-A

Another member has returned to the fold and written in of his doings. It is no less than Bob Sherwood. We all believed him to be in Bremerton, Wash., where real winters exist, but instead of that we find him in Ponce, Porto Rico. In mileage it is only a bit nearer, but in customs, and so on, it is very much farther than Washington state.

Before reading Bob's letter, I must first apologize to you all for skipping a contribution to the last issue of The Review, but Old Man Flu got hold of me with a terrible "grippe" and I went down for the count of 8 (days). But I am back on my feet again and will try to continue my feeble efforts in your behalf. Now to hear from Bob: "You are away off in your address but your letter has followed me around, so here goes. Along about the last week in August, the Manager called me to his office and asked if my foot itched any" (I imagine, Bob, that that might be painful, considering the size of your pedal extremities), "and then said there was an opening down in Ponce. The Puget Sound Power and Light decided they could do without me and gave me a week to leave town. Then they blew up a couple of transformers and kept me up most of the week but I got out on time."

"I stopped in Chicago and saw Munro and came on to Boston and then spent 10 days at home. That was sort of a lucky

break as I had been figuring on a trip home this fall and had not taken my vacation on that account. In Boston, things seemed to be much the same. I spent two or three days around the office, but didn't get over to Cambridge but once at night when I went through Harvard Square. Didn't get to the Institute at all.

"I left for here about the middle of September and since arriving have been superintendent of the company — our old friend, you know, the Ponce Electric Company. This is quite an experience, too, especially as it is a Spanish Island as far as language is concerned. I know 'si' and 'no' and a few other words and have a live foreman who is black as ink and knows about six words in English. We have a fine time, though, and understand each other pretty well now. I can savvy the stuff when he does the talking and uses his hands a little. And then I flourish the Spanish a little in return but very little so far. We have a couple of boys in the office who handle both languages pretty well, so if anything urgent comes along I take one of them along for an interpreter.

"The hurricane didn't hit here this year and outside of that there has been little excitement. The sun shines every day and it rains very little." (Wait till spring, Bob, you will forget the sun entirely.) "I was in swimming in the Atlantic January 3 and expect to go again next Sunday. Last Sunday we swam at Guanica, which is on the south side of the island (about 20 miles west of Ponce). The temperature runs from 66° to 85° this time of year for an average day and 10° higher in summer. Oh, well, you were down this way a few years ago with the Fleet so know what it is like." (Sure was, only 100 miles north of your position but over 600 miles west. Be sure not to get your toe bitten off by a barracuda when swimming.)

"We are kept fairly busy with dances and bridge and other social functions. Most of the better class speak some English acquired through the schools here or in the states. Did you ever know Carlos Ferré '28, fencing team, also an older brother, Luis Ferré? They, or rather their family runs the local bran works and manufacture a lot of sugar mill machinery.

"This isn't a very big Island. I have been around the west end and back over the middle to San Juan, and to a couple of places up in the center of the place and have a trip to make around the east end now. The roads are the crookedest damn things you ever saw. The Island is really a mountain ridge and the hills have very steep slopes and lots of cuts. The roads must have been laid out by mountain goats. I have seen places where you could see four levels of road below you due to switchbacks. The pavement is widely advertised in literature about the Island. In reality, it is tar on a limestone base about wide enough for a car and a half.

"If you want to raise a family, come here. They do that best of anything. A family of seven is customary and 10 to 14 very common. The work is interesting

1926 Continued

and there is a lot to learn so what more could you ask? Did you know Mac Innes is in Reno? Not a divorce! Working for Sierra Pacific Power Company. See you in 1932 when I have a month's vacation. P.S. Married? No! Prospects? None. Senioritas? Buenas! Pero muy muchos chaperones todo el tiempo! Caramba!"

Well, it certainly is a change for Bob to be in a Latin-American country. From the P.S. to his letter I can see that the marked difference in their social customs has been impressed upon him. It reminds me of a time that another officer and I were strolling along the main avenue of Cienfuegos, the avenue being arranged much like Commonwealth Avenue, Boston, with its walk-way in the center. It was in the late afternoon and most of the leisured class were making their daily promenade. We met two young senioritas, one of whom my friend had met a few months before at a dance given at the local yacht club in honor of the aircraft squadron as it stopped at this place on the way south. We, of course, stopped and bowed but received only a quick nod and a hurried word about chaperone and they beat a hasty retreat. They could not in propriety speak to gentlemen even in broad daylight on the main thoroughfare without the presence of a chaperone. But such is their custom. It would be real interesting if Bob would favor us with some experiences of the Latin-American customs as they are so different from ours in the States.

So our old friend Mac is in Reno. Oh, oh, it looks bad for him. He always was a ladies' man and with all the idle wildcats that go out there to spend the necessary time to establish residence, they may while it away practicing on him. We all hope that he returns to us whole none the worse for his experiences. — BENJAMIN P. RICHARDSON, *Secretary*, 29 South Second Avenue, Mount Vernon, N. Y.

1928

Our Class held the distinction of having the largest turnout at the Annual Alumni Dinner at the Hotel Statler, Saturday night, February 28. Course IV-A lead with three representatives — Maeser, Caputo, and Cade. Anderson, Basilio, Birkenwald, Collins, de Camp, Harris, Johe, Lester, Nichols, and Sturznickel comprised the remainder of the '28 delegation.

The Alumni Dinner this year was by far the best ever held since '28 has been included among the Alumni classes. For the first time in the history of the Association, ladies were invited and added a spirit of graciousness lacking at previous affairs.

Bill Hammond, I, recently called at Ye Sec's home address at 420 Memorial Drive. Bill is still with the Penn Railroad and is living at the Central Queens Y.M.C.A., Jamaica, Long Island. From all indications Bill will have a most interesting announcement to make soon. Lest congratulations be made prematurely, the Class awaits further developments with a suppressed desire.

Letters from '28 men are becoming scarcer and scarcer. The length and interest of this column depends on you men. Are you engaged or married? Have you any children? Where are you working? What have your experiences been since you left the Institute? News — let us have it, or as Phil Cook would say — All the news that is "print to fit". — GEORGE I. CHATFIELD, *General Secretary*, 420 Memorial Drive, Cambridge, Mass.

COURSE I

Most of our news this month is a very welcome letter from Bennie (Kent) Hough. It came from 14 South Duke Street, Lancaster, Pa., and reads in part: "As you know, I was with the United Fruit Company in Guatemala for about a year after we got out, returning to this country late in 1929. I was pretty much the worse for wear when I hit New York and had to take several months off to recuperate. Then it required a couple more months for me to get located with the Central Maine Power Company on their job in Bingham, Maine. I found that Jake Jameson had been there before me and had been gone only a month or so when I took over the tradition. This job was the best I ever had anything to do with and I can honestly say that although the hours in the field were long and time off almost non-existent, yet I enjoyed every day I was there and left the place with real regret. Now I am working on the Safe Harbor Dam near Lancaster. I have been here since February 1, and I believe I shall get some very valuable experience. If I bum around enough on these dam jobs I ought to be able to go back to Technology and teach hydraulics. I should be very glad to hear from anyone at the above address. Just before I left Boston to come here, I was the host at an informal little gathering at my house. Among those present were: Bill Kirk, Rudy Slayter, Ralph Johe, Bud Wilbur, Terry Hurlbut, and Doc Lancaster, medico at the summer camp in '27. A very pleasant evening was passed at the old familiar game of dealer's choice. Without saying anything about who came out ahead, I will merely remark that in leaving the next day to take this job, I was just one jump ahead of a business-like delegation which was reported widely as being very anxious to see me."

We must correct a statement in last month's notes to the effect that Ed Ure and Cy Meagher are working on different subway jobs for different contractors. The facts are that both are working for DiMarco and Ryman and are on the same job. They are handling the lines and grades at opposite ends of the job, and hope to meet in the middle of the job.

Another quick change was made by Hy Weinberg. Last month we reported that he had been with Bing and Bing on apartment house construction for about two weeks. Now he, too, is with the subways but with the City Board of Transportation. — Jim Morse is still with the New York Central but in addition is doing some teaching at Brooklyn Poly-

tech. — George Mangurian was in town the past week-end. He has been working almost night and day recently on a new all metal plane for the Navy. The job has reached the test stage and he is looking forward to a few months of comparative rest. — GEORGE P. PALO, *Secretary*, 1095 Jerome Avenue, New York City.

1929

The rubber world of Akron has not turned over since the last notes were forwarded to The Review. However, Firestone has cut tire prices again and of course all the other companies followed suit. That just means that it will be one more year before we get our salary reductions back again. Another event of not such great moment was my moving to a new address. Though it is of no great importance to the world-at-large, please note it, for one of these days you'll be writing in all the news since June, 1929, and I would be very sorry to have that long sought message go astray, because you forwarded it to 339 Hillwood instead of 415 Hillwood.

About a month ago the local Technology Club staged a royal stag party at one of the better country clubs about town. After a broad canvass of the local Alumni we had a turnout of 35 for dinner, most of them remaining for cards and so on afterward. Everyone reported a good time. The next party will be a mixed party sometime this spring. Johnny Hartz and I were members of the organization's entertainment committee and both of us planned on a big time at the stag party. Johnny, however, missed it, for he had to rush home to a hospital in Indiana to be operated on for appendicitis. Rather a long hike for an urgent case, but he made it and is now healthy and back at work after a rapid recovery.

The engagement of Miss Gladys Sutton Cowdrey of Garden City, Long Island, to Edward Rawson Godfrey, XVI, has just been announced. Rawson is now with the aviation department of the Standard Oil Company of New Jersey. We all join in extending our hearty congratulations.

A new course secretary, Herman A. Ellis, IV-A, is heard from in this issue and I hope that the other secretaries appreciate the work he has done to get information from the members of his Course. — EARL W. GLEN, *General Secretary*, 415 Hillwood Drive, Akron, Ohio.

COURSE IV-A

The fellows who took Course IV-A have now had ample time to get themselves jobs, wives, children, and so on, and after an initial period of some 18 or 20 months, break into print in these columns for the first time. No presidents have yet evolved, nor even chief engineers, but the embryos are rapidly developing, and after all, the consensus of drafting-room opinion before graduation was that none of us could expect such honors before we were two years out (that is with one or two conspicuous exceptions!).

Eddie Guest, however, wins the undisputed championship. He is the beaming father of a little six-months old

1929 Continued

engineer who has been christened William Sullivan Guest. Eddie has assumed also the rôle of lecturer, having given a talk on skyscraper construction, illustrated with 80 slides, before a group of architectural students at Clemson College. — My data on marriages may not be complete, but as far as I know, Ford, Guest, Horn, and I are the only ones who have fallen, to date. Ford, as you all remember, was married to a beautiful little Boston girl before the end of school. Guest claimed an old school-day sweetheart shortly after graduation, and I did the very same thing on September 8, last. From all reports Frank was a lucky stiff himself.

I have received letters from a few of the fellows and am always on the lookout for more. Harry Poulos writes in part: "Well, old man, I was tickled somewhat to see that an engineer can be prosperous enough to be able to afford a wife. If you want to know about me, I managed to stick around in Boston and have been employed by the city buildings subways. Do you remember the old Governor's Square? Well, we are building a subway under there. Talking about reinforced concrete, all you'll find in me are 'J's' and 'K's' only I don't have to check them as often as we used to for Peabody. It is very interesting work and due to more politics and less engineering I am given an opportunity to do a lot of designing, because most of the fellows in the office are O'Dooles and Macs and O'Sullivans, without any engineering training. I have seen Al Moore several times and also J. Jennings. Holt is also in town, but I have not been able to see him."

Milton Male seems to have had some of the breaks we expected of him. He writes: "You know I have been with the Structural Steel Welding Committee of the American Welding Society for quite some time. At this moment the program is almost in shape to be put into final form for publication, and if I can maintain the speed I am now making, I hope to finish writing the report and turn it over to the Committee for approval by the middle of April. After a few trips to Washington and Bethlehem, I went to Chicago in September to deliver a paper before the fall meeting of the Welding Society. I had been working on that theory for five months, and it was published in the *Journal of the American Welding Society*, September, 1930, issue — 'Theory of Stresses in Side-Welded Joints.' All the math courses I took at Columbia (I am still taking more — the one now is the 'Theory of Involute Functions') came in mighty handy and made the stuff we took at Tech look like simple algebra. On my way back to New York from Chicago, I stopped at the Gary plants of the American Bridge Company and Illinois Steel Company, and at the Homestead plant of the Carnegie Steel Company. I certainly wish I had had such an opportunity to see steel in the making before we took those courses in chem. There is something so starkly elemental in the making of steel — the molten stuff pouring from the blast furnaces, ingots, soaking pits, blooming

mills, roughing, intermediate, and finishing passes — and there you have your section as easy as all that!"

The fellows responded very nicely to my quest for information about themselves. — HERMAN A. ELLIS, *Secretary*, 32-50 93rd Street, Jackson Heights, New York, N. Y.

Technology Club of Milwaukee

You will be interested to learn that the Technology Club of Milwaukee has resumed activities this season after a lull of one or two years. On December 2, 1930, about 20 Alumni attended a dinner in honor of Dr. Tryon who was visiting Milwaukee at that time. At that gathering, it was decided to hold a series of informal monthly dinners during the remainder of the season. The first of these was held January 8, with a fair attendance.

At the January meeting the following new officers were elected: President, Dr. John F. H. Douglas '05, 816 N. Cass Street, Milwaukee, and Secretary-Treasurer, Maurice D. James '27, 1713 North Prospect Avenue, Milwaukee. A permanent address for the Technology Club of Milwaukee was chosen: Room 13, 207 E. Michigan Street, Milwaukee. It was suggested that this permanent address be kept on record at the office of the Alumni Secretary, but that current communications to the President or the Secretary be sent to the above addresses.

The present plans are that informal dinners be held on the first Tuesday of every month at the Colony Inn, Milwaukee. It is hoped there will be a large attendance at these dinners. Anyone passing through Milwaukee is cordially invited. — MAURICE D. JAMES, '27, *Secretary*, 1713 North Prospect Avenue, Milwaukee, Wis.

Indiana Association of the M. I. T.

The Indiana Association had the pleasure of entertaining Professor C. Frank Allen on the occasion of his recent visit to Indianapolis. Ten or twelve of the fellows turned out to this dinner meeting at the University Club, Monday, February 9.

Possibly we gave Professor Allen too long and hard a grind, for we requested him to discuss with us, preliminary to his main talk, the pros and cons of the proposed reorganization plan for the management of the Alumni Association. This was followed by a most interesting talk on the attainments and capabilities of President Compton. Professor Allen's talk was of a very intimate nature and all the men surely now feel somewhat acquainted with him and have every confidence that he is the man for the position.

Those attending expressed their appreciation of this privilege of hearing Professor Allen and thanked him for his interesting discussion and comments. — J. LLOYD WAYNE, 3d, *President*, Indiana Bell Telephone Company, P. O. Box 408 Indianapolis, Ind.

The Technology Club of Rochester

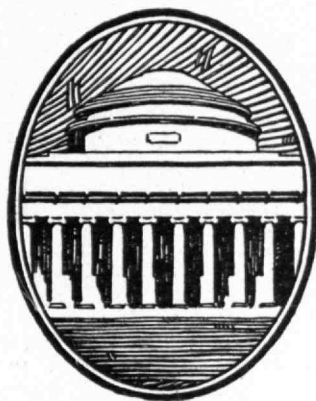
The Rochester Technology Club held a dinner meeting on the evening of February 4, at the University Club. The ladies were present, and the meeting was addressed by Dr. C. E. K. Mees, Director of the Research Laboratory of the Eastman Kodak Company. Dr. Mees gave a very interesting talk on "This Changing World." — CLARENCE L. A. WYND, '27, *Secretary*, 112 Meigs Street, Rochester, N. Y.

The Technology Club of Cincinnati

The Technology Club of Cincinnati held its annual dinner and election meeting Monday evening, February 16, at the Cincinnati Chamber of Commerce. Colonel Frank L. Locke '86, Personnel Director of the Division of Industrial Cooperation and Research of the Institute, was the speaker of the evening. The 34 Alumni who turned out to hear him had their keen interest aroused by his broad sweep through Institute affairs of today. His intimate pictures of the new president, Doctor Compton, of new and old members of the faculty, the narration of student and Alumni activities, the march of progress in accomplishments at M. I. T. itself, all formed a spell-binding tale to his avid listeners. The Institute is to be congratulated upon its acquisition of Colonel Locke for the post he holds.

After the spirits of all had been elevated to the proper level of good fellowship, a splendid repast was enjoyed which was followed by a viewing of three reels of films depicting the scenes of the last reunion and the recent inauguration festivities. Colonel Locke, John D. Cochrane '23, and Charles R. Bragdon '07 collaborated in the showing of the movies. Stuart R. Miller '07, in charge of the scholarship fund, reported on the splendid record made by the club's protégé at the Institute this year, and Treasurer Oliver Bardes '21, accounted for his office to the satisfaction of all. Following the report of the nominating committee the Secretary was instructed to cast the ballot that elected the following officers: John D. Cochrane, Jr. '23, President; Kenneth A. Wright '19, Vice-President; Oliver L. Bardes '21, Treasurer; and William V. Schmiedeke '12, Secretary.

Those present were: C. E. Bragdon '07, J. D. Cochrane, Jr. '23, S. R. Miller '07, W. V. Schmiedeke '12, O. L. Bardes '21, W. W. Carter '29, H. M. Campbell '14, H. W. Streeter '07, J. F. Dreyer '29, R. Tietig '98, L. M. Merrill '11, H. D. Loring '07, L. T. Cummings '12, G. I. Brown '20, J. B. Stewart, Jr. '08, M. Carlisle '90, W. H. Lee '96, Moritz Sax '96, W. E. Brotherton '73, A. H. Pugh '97, J. C. Todd '23, J. S. Raffety '22, F. W. Morrill '07, A. K. Laing '26, C. H. Spiehler '08, K. A. Wright '19, J. G. Strobbridge '19, N. C. Works '17, F. W. Spalding '22, F. W. Garber '03, W. J. Schwarz '25, R. C. Dolle '21, Milton Wurzelbacher '20, Nathan Ransohoff '10. — WILLIAM V. SCHMIEDEKE, '12, *Secretary*, The Penker Construction Company, 1030 Summer Street, Cincinnati, Ohio.



INFORMATION

THE TECHNOLOGY REVIEW BUREAU exists to supply authoritative information to anyone interested in details regarding the Massachusetts Institute of Technology. It serves as a clearing house for inquiry and aims to further the spread of exact information regarding entrance requirements, outline of courses, subjects of instruction and other information which may be of aid to the students considering undergraduate or graduate study at the Institute.

The Institute publishes a variety of bulletins, fully descriptive of individual courses, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

Ask for the following circulars by their descriptive letters:

AB: For general information, admission requirements, subjects of instruction, ask for Bulletin AB.

C: For announcement of courses offered in Summer Session, ask for Bulletin C.

D: For information on Advanced Study and Research Work, ask for Bulletin D.

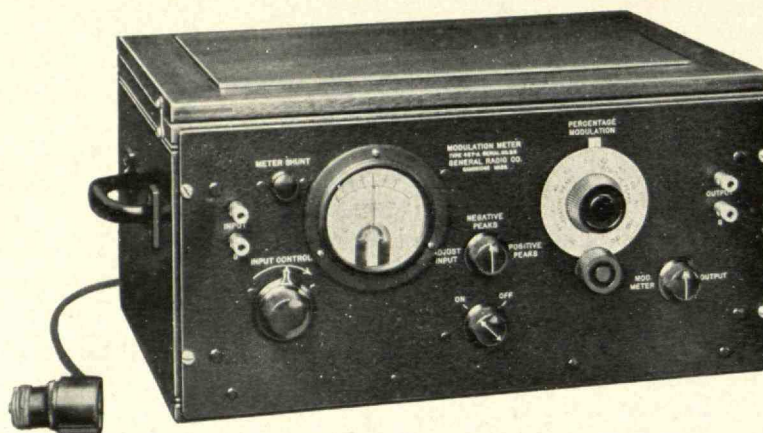
E: For the reports of the President and of the Treasurer, ask for Bulletin E.

Y: For a popularly written explanation of Engineering Courses, ask for Bulletin Y.

All inquiries sent to the address below will receive prompt attention

THE TECHNOLOGY REVIEW BUREAU

ROOM 11-203, MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS



*Type 457-A Modulation Meter
Price \$125.00*

CHECKING BROADCAST STATIONS

SOME broadcasting stations are like the trombone with a puncture: lots of power but little sound. In fact, so many stations were radiating useless energy that the Federal Radio Commission threatened to rule off the air all which could not deliver a high "percentage modulation" and at the same time maintain the quality of transmission.

The General Radio Company has just announced a simple modulation meter for the measurement of percentage modulation which until now has required elaborate apparatus and a well developed experimental technique. It is a boon to every broadcaster and, incidentally, to every radio inspector, for it settles once and for all the question of "who's right."

The modulation meter is another example of the work which the communications engineers of the General Radio Company are prepared to undertake. If you are interested in this or any other General Radio apparatus, we shall be glad to send you a copy of Catalog F-T4.

GENERAL RADIO COMPANY

OFFICES

LABORATORIES

FACTORY

CAMBRIDGE A, MASSACHUSETTS